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RICHARD P. ROTHWELL, C. E., M. E., } Editors.
ROSSITER W. RAYMOND, Ph. D., }

Gen. FRANCIS L. VINTON, M. E., Superintendent of Western Office.

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL, P. O. BOX 4404, New York. Articles written by Mr. RAYMOND will be signed thus *

Business communications for the Western Department should be addressed to the Western Office at Denver, Colo.

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THE METROPOLITAN ELEVATED RAILWAY.

It is perhaps too early to decide most of the questions connected with the running of the elevated railways. The Metropolitan is now in regular operation, though somewhat cramped for want of cars; but how much business it will command when the novelty has worn off, how much it will injure the horse-railways, how much it will itself be injured by the completion of the rival line, how much it will damage the property on its route, and how much it may eventually have to pay to property-owners on that account, are things which nobody knows at present. The smoothness of the track and the comfort and beauty of the cars are universally admitted. It is equally plain already that in the narrow down-town streets the structure is a great nuisance to walkers on the sidewalk, drivers on the pavement or rail, and occupants of the ground floors and basements. It darkens the street more than the superstructure of the Greenwich street road; and thus far, as we judge from personal inspection, the dummies emit an unnecessary and unwarrantable quantity of cinders. This is an evil which can be and doubtless will be abated. As to other matters, we trust, for the sake of the general public, that the facilities of rapid transit will be successfully reconciled with all conflicting rights and interests. *

THE BONANZA SUIT.

The suit commenced last month in San Francisco against Messrs. FLOOD, MACKAY, FAIR and other parties (including the Consolidated Virginia Mining Company, the Pacific Mill and Mining Company, the Pacific Wood, Lumber, and Flume Company, the Virginia and Gold Hill Water Company, and the Nevada Bank) by JOHN H. BURKE, a stockholder in the Consolidated Virginia, for himself and all other stockholders who may elect to come in under the decree to be made in the action, is certainly not lacking in audacity. The complainant alleges that the stockholders of the Consolidated Virginia have been wronged to the extent of $35,634,338 by the illegal and dishonest proceedings of FLOOD, O'BRIEN, MACKAY, and their associates, and claims also interest at ten per cent on this amount, making nearly $10,000,000 more. It is announced, moreover, that a similar suit will immediately be commenced for the stockholders of the California, and that this will involve about $15,000,000.

There are a good many marks of a stock operation and a personal feud about this movement. As to the amount claimed to have been wrongfully appropriated by the defendants, it is (without interest) more than 45 per cent of the total gross product of the two mines, since the bonanza was discovered; and, subtracting it from that product, as it is charged that the defendants subtracted it, would leave but $50,000,000 to cover all the dividends that have been paid, and all the expenses of working not included in the alleged plunder. But the dividends alone amount to $65,880,000 (our figures are those of April 15th). We must therefore believe, if we accept the allegations of this complaint, that the "bonanza ring," out of a total product of less than $96,000,000, paid nearly $66,000,000 in dividends, and a large amount in wages and legitimate purchases, and then directly or indirectly stole over $45,000,000. But $20,000,000 of this amount is alleged to be the value of slimes and tailings dishonestly appropriated. Allowing for that, as not included in the acknowledged product of the mines, we are still brought to the conclusion that the dividends and the alleged illegal profits amount to more than the product, leaving nothing at all for the wages of workmen and the purchase of supplies.

This conclusion being preposterous, we look further into the details of the complaint, and find that $10,000,000 is claimed as damages from a certain sale of mining ground made by MACKAY, FAIR, FLOOD, and O'BRIEN to the company, in exchange for stock. These gentlemen being Trustees at the time, it is claimed that the sale was illegal, and not only the profit then realized by them, but all profits of the said stock since, and its present value, are reckoned in the reclamation. The profits of the Bank, of the Water Company, of the Milling Company, and on wood and lumber are likewise set in array; and the list is concluded with the item of $200,000, "commissions on purchase of supplies."

The whole case turns on the question whether the defendants, as trustees of a company, could legally deal with the company, and, that being answered in the affirmative, whether, in so dealing, they have abused their position as trustees to advance their own interests at the company's expense. If some of the specifications of the complaint are true, we can not defend the acts complained of; but, outside of this manifestly hostile and exaggerated accusation, we have no reason to believe that they are true. Messrs. FLOOD, MACKAY, and O'BRIEN have always seemed to us to be sincere believers in the value of the mines they controlled upon the Comstock, and to be both determined and content to work those mines legitimately, for their legitimate profits. They have not, so far as we know, been found unloading their stock upon the public just before a decline in its value; nor have they been, so far as we know, responsible for the exaggerated accounts of the wealth of the *bonanza* at which all San Francisco, and much of the world besides, went crazy.

It is the fashion just now to assail these men. The San Francisco *Chronicle* publishes a "scathing" attack upon them (reprinted in pamphlet form), in which all the misery resulting from the collapse of the *bonanza* speculation is laid at their door, and they are charged with having worked up, by false reports, the public impression of a value in the *bonanza* far beyond what the facts would warrant. This we do not believe. The opinion given by Mr. DEIDESHEIMER in 1874–5, that the ore-body was worth at least $1,500,000,000, was not mentioned nor confirmed in Mr. FAIR'S annual report of that year. Prof. ROGERS' report to the Director of the Mint in 1875—criticised by us soon after as too sanguine—which estimated the assay value of the known reserves at $300,000,000, was not mentioned in Mr. FAIR'S annual report for 1875 (December 31st). At that time, the public had been for some months in possession of the U. S. Commissioner's report on mining statistics, bringing the description of the *bonanza* down to March 31st, 1875. In that report, Mr. RAYMOND said of the *bonanza* in the Virginia and California: "Fabulous reports and estimates have been given, varying from $150,000,000 to $1,500,000,000 'in sight.' It is reasonable to suppose that the ground from the Best and Belcher north line to the Ophir south line, and in depth from the 1300 to the 1550-foot level, will yield, judging from present developments and present yield, ore for two years to come at the present rate of extraction, viz., 450 to 580 tons daily. The quality of the ore is a matter of pure speculation. At present the average is about $150 per ton, but $300 to $500 can be extracted at will, by selecting the stopes. Mr. LUCKHARDT thinks that $160 may possibly be an average of the whole mass referred to; but this is merely a prudent guess. At this rate there would be over $60,000,000 in sight. But such calculations are at present futile."

Now, each of these, and of many other estimates, stood on its own authority. So far as we know, the officers of the *bonanza* companies indorsed none of them and circulated none of them. Their reports stated facts, without conclusions. If an infatuated public blew bubbles of hope out of mere drops of information, we do not see, and, in the absence of proof, we will not believe, that the managers of the companies were to blame.

The time is approaching when energetic and persevering explorations will again be required to restore prosperity to the Comstock mining industry. We trust that a part of the profits of the *bonanza* will then be applied to the work of further developments; and we shall not be surprised to find even the San Francisco *Chronicle*, some day, praising the pluck and public spirit of the "*bonanza* ring." *

GENERAL HUMPHREYS AND MR. EADS.

Now that Congress has adjourned, we shall hear less of Mr. JAMES B. EADS and his schemes for manipulating the Mississippi. During the session, his friends in the newspapers made frequent and vigorous attempts to impress the public with the unqualified success of the jetties, and to pre-

pare the way for the further schemes which he favors. It is part of their tactics, also, to misrepresent and abuse the Chief of U. S. Engineers; and we are sorry to see the N. Y. *Tribune* misled by its Washington correspondent into editorial participation in such attacks. Last month Gen. HUMPHREYS wrote a perfectly appropriate and legitimate letter to the Chairman of a Congressional committee, respectfully protesting against a bill which was designed to ignore the thorough survey of the Mississippi now under charge of Major SUTOR of the Engineers, and put the whole subject into the hands of a new commission, with extraordinary powers. It was the duty of the chief of the corps to speak on behalf of his own officers in such a case: and the attempt of Mr. EADS and the *Tribune* to make it out an impertinence is merely ridiculous. Whether Gen. HUMPHREYS is right in his views and just in his estimate of Mr. EADS's jetty operations is another question. We have already expressed our opinion clearly on that subject; and we do not care to reopen it now, since the very point of our own criticism has been that Mr. EADS was crowing too early, and that the principal objection to his plan, namely, the cost of permanently maintaining the channel, would begin to be felt a little later. We believe the charts and surveys show already that Mr. EADS's system will fail; but it is hardly worth while to argue a matter which time will put beyond argument. *

THE CHATTANOOGA EXCURSIONS.—IV.

We find that our humble attempts to preserve the memory of the Chattanooga excursions have met with considerable favor. There has been a rise in the cash receipts of the JOURNAL, due, we are told, to the procession of people coming to buy extra copies for distribution among their friends. The Managing Editor, having been advised in the matter by the Publisher, has changed his tone of discontent in view of our prolixity, and now says to us, as the bibulous but unaccustomed Hoosier said to the New York waiter, concerning sherry-cobblers, "You can continner the manufacter o' them articles till I tell you to hold up!" Moreover, we are receiving epistolary recognition, such as the London wits of the last century contributed to the *Spectator*, and Britons still bestow upon the *Times*. We can not make either private or public acknowledgment of all these communications. One or two may be mentioned, sample-wise, here and now.

A patriot, signing himself "Bygones B. Bygones," wants to know why we omitted to report fully the soul-stirring speech delivered at Rockwood by a Chattanooga orator, in which the Lost Cause was so gracefully wrapped up in the Star-Spangled Banner, and the hatchet was dug up, inspected, and declared to be buried, and the South, magnanimous toward all, repentant toward none, was depicted as heartily uniting with the forgiven North to develop Southern resources for the good of the whole country. As this little outburst of eloquence was nominally in reply to a toast in honor of the ladies, it is evident that the orator allowed himself a good deal of latitude; and a reference to the map shows it to have been precisely the latitude of Buncombe County, North Carolina. We suspect, in fact, that a good many of the most progressive men in that and still more southerly latitudes have to carry on their plans for the advancement of civilization behind a mask of fierce conservatism. But Biblical scholars tell us that repentance is simply "a change of mind;" and preachers are never tired of explaining that its practical sign is "not doing so any more." In this sense the South has had a sufficiently orthodox experience; and it is not worth while to scan too closely the passionate protests of one who, shouting she would ne'er repent—repented.

Three members of the Institute, who modestly desire not to be named, suggest that we might usefully give some practical directions how to throw a pail from the deck of a moving steamer so as to get a pailful (or even half a pailful) of water for a morning wash. We can only describe the operation as we witnessed it. Standing near the bow, you gracefully cast the pail into the stream, giving it all the rope you can. Then you try to pull it in, but it prefers to pull you out. Yielding discreetly to this resistance, you proceed in a lively manner to the stern, hopping over the chairs and what not that intervene. Arrived at the stern, and finding the strength of three persons unaccountably insufficient to bring in that cussed pail, you accept the assistance of a brawny deck-hand; and the four of you haul it in—bale broken, staves burst, and water all leaked away. Then the chambermaid comes briskly out, unconscious, with another pail; hums a little tune; gives a little fling and a little jerk, and lands a pailful of water as neatly as you would a trout. At which you say, "By Jove!" and, when the chambermaid's back is turned, appropriate that pail, asking no questions. This is the way to do it; and if our readers find the account insufficient, they may apply at Glendon, Rockwood, or Easton, for further particulars.

"Lehigh Valley" inquires anxiously whether it is true, as he has been informed, that down in Tennessee and Alabama the coal, ore and limestone are mixed by nature in just the right proportions, so that you have only to set fire to an outcrop of coal and then tap all the iron you want out of the hill-side. No; this is not true. It is of course highly probable that meteoric iron is manufactured in the moon and elsewhere by some such process, and that the vast stores of carbonic acid (we beg pardon, anhydride) which Dr. STERRY HUNT has, so to speak, demonstrated to exist in the inter-stellar spaces are nothing more than cold, cosmic, tunnel-head gas. But HUNT has not yet discovered in Tennessee the decayed slags indicative of such a process there, and the theory is therefore without terrestrial foundation.

Another member of the Institute sends us several smart sayings of his own, which he thinks we could "work in," and gives us liberty to use his name if we think proper. With heroic self-denial we have returned his letter, suggesting the unwisdom of thus wasting his *repertoire*. He will be grateful to us when the next excursion comes round, and he finds himself able to use these jokes again. He will not be detected: nobody noticed them the first time.

But we can not linger longer over our correspondence. We must resume the meandering clue known to authors as "the thread of our story," which now leads us

TO, IN, AND ABOUT KNOXVILLE.

At Loudon a special train received the party, with a jolly conductor, who informed us that he had waited for us all night—"and wasn't disappointed, either!" That thief of time, the Tennessee River, is pretty well known in this neighborhood. But there was no time lost by the train; and we were soon deposited at the hotel in Knoxville, where we were made acquainted with the natural resources of the country in the welcome form of breakfast.

There is an amicable rivalry between Knoxville and Chattanooga. Knoxville has more age and wealth; Chattanooga has thus far shown more enterprise and audacity. Both are richly endowed in climate, beauty of scenery, agricultural and mineral resources, and present and prospective lines of communication, upon which they occupy commanding strategic positions. To these advantages Chattanooga is wide awake, and Knoxville is waking up very fast. They say, in Chattanooga, that the Knoxville people wait till the Chattanooga people have originated some movement, and then go in and try to outshine them. "You just wait and see," said Chattanooga. "They have heard at Knoxville that we are entertaining the Institute; and they won't rest until they have got hold of you, to show what they can do." Certainly the hospitality of Knoxville, as administered by Col. C. M. MCGHEE, of the East Tennessee, Virginia and Georgia, the Knoxville and Ohio, and we don't know how many other railroads, if it did not surpass that of Chattanooga, failed simply because impossibilities are beyond even Col. MCGHEE.

A delightful drive about the city and suburbs was one of the features of the day. Although fresh from the noble amphitheater in which Chattanooga lies, we were forced to confess that Knoxville, nestling (but not too closely) among the mountains, is still more beautifully situated. It would be difficult to imagine a lovelier site. There is level land and room enough for business, while there are numerous heights for residences. Of course we went out to the old intrenchments, and realized, under the graphic descriptions of some who had taken part in the scene, the conflicts, brief but fierce, which attended the siege. But the serene and inspiring beauty of the present forbade the reviving of the distressful past, except by way of a vague background. It somehow enhances the charm of a peaceful, fruitful, and perfectly picturesque landscape to recall that it has been a battle-ground.

A most interesting and instructive excursion was made by special train over the Knoxville and Ohio Railroad to the coal mines at Careyville and Coal Creek. The former place is, we believe, the present terminus of the road, about 38 miles northwest of Knoxville. Grading has been carried some miles further, and preliminary surveys have been made for a continuation of the line to connect with the Cincinnati Southern, of which we will speak further on. For the present, the Knoxville and Ohio depends on its local business, principally from the coal mines at the two points referred to. For a good description of these (and many other things) we refer the reader to the geological reports of SAFFORD and BRADLEY, and to the excellent pamphlets issued in 1876 by Mr. J. B. KILLEBREW, the Tennessee State Commissioner of Agriculture, Statistics, and Mines. These gentlemen have rendered inestimable service to Tennessee in presenting clear and forcible accounts of the inducements which the State holds out to immigration and to capital; and we learn, with pleasure, that their labors have not been in vain.

At Coal Creek many of the party entered the mine of the Knoxville Iron Company, in order to inspect its fortunate natural conditions and the method of exploitation based upon them. The nearly level seam, containing five feet of coal, with their shale partings, conveniently placed, is opened by an adit-gangway, directly in the coal. The roof is hard and firm black shale; the floor, hard fire-clay, interstratified with thin sandstones. The long-wall system can therefore be employed with advantage, particularly as no blasting is necessary. Availing themselves of the shale-partings, which they pick out, and then "pry" out the coal, beginning with the upper layer, the miners obtain their product in large blocks, and, it is said, with a total of "slack," after all handling, not exceeding one tenth of the whole.

Here also we found convict-labor; but the men wore no chains, the law

of Tennessee, as we were informed, being different in this particular from that of Georgia. But the ubiquitous sentinels were on hand, with their loaded shot-guns, looking very vigilant and very much bored. Indeed, one pities their monotonous life even more than that of the convicts they are set to watch, who never give them the opportunity to do any thing. It must be dreadfully tedious to sit day after day with your gun loaded and cocked, and never be permitted to discharge any thing except your duty!

The Knoxville Iron Company has a large rolling-mill at Knoxville, which is about being doubled in capacity. It is said that the enlargement has been paid for by the profits of the business. If this be true, it can not refer to the immediate present. With all their natural advantages, these Southern concerns are feeling the hard times, as well as those of the North. Doubtless their future prospects, based on the advancing development of the Southern and Southwestern market, are in some respects brighter.

Just now, both Knoxville and Chattanooga are looking with much interest to the various schemes for the completion of the Cincinnati Southern, a road which, after the expenditure of vast sums of money in constructions of the most magnificent and substantial character, stands as useless as a bridge that does not quite cross the river. A proposition has been made (and temporarily withdrawn) on the part of President WILSON, of the E. T., V., and G. R.R., to complete the connection via Knoxville, on certain conditions as to traffic. But whether this plan should be carried out or not, Knoxville will have, at no distant day, a western connection via Louisville; and meanwhile, by the construction of the Morristown Branch and other roads opening transportation for the pure, rich non-phosphoric ores of East Tennessee and North Carolina, Knoxville is laying hold of its greatest element of future strength, the manufacture of high-grade iron and steel. In the greater accessibility and supply of these ores lies her chief advantage over Chattanooga—the abundant "dye-stone" ores being common to both. It is true that the rapid progress of metallurgical science is rendering the presence of phosphorus in ore and pig less fatal to the manufacture of steel. The bold example of TERRENOIRE in the production of phosphoric steel has been largely followed in England and elsewhere, though not yet in this country; and now we hear that SNELUS claims for his "lime-lining" a perfect success in the elimination of phosphorus. But it will still remain true that ores and irons without this ingredient are more valuable than those which contain it. The pleasure and profit of taking it out will always be surpassed by the pleasure and profit of not having to take it out. So we can heartily congratulate both Chattanooga and Knoxville.

And now began the process of melting away and scattering, in which all excursions end. It is curious to note how men who have sauntered about for a time with boundless content, as if life were all leisure, will suddenly start up in a desperate hurry and go home with a panic-struck celerity. Thus have we seen a quiet and happy party, just returned from a lazy trip up the Nile, and without a single bit of news or of necessity to spur them on, rush by night and day across Europe to catch some particular steamer for New York, driven by nothing but the excitement of carrying out their whim. And thus the Institute Excursionists, who cared not a whit how long they floated on the Tennessee, became all at once preposterously anxious to make connection with this or that express train, and reach Louisville, Pittsburg, New York, or Philadelphia by this or that time. Some pretended that they had important business, but the majority, knowing the thinness of that plea, confessed themselves to be in a purely artificial hurry. So in groups and squads they fled away, North, South, East, and West; and the memorable Chattanooga Meeting was over.

REPORT OF THE CHEMICAL COMPOSITION OF THE GAS OF THE MUNICIPAL GAS-LIGHT COMPANY.

BY HENRY WURTZ.

HOBOKEN, March 4, 1878.

To Charles G. Francklyn, Esq., President of the Municipal Gas-Light Company:

SIR: Having been desired by you, in December last, to enter into a chemical investigation of the gas made at your works in Forty-fifth street, I began such investigation about the first of January, and have been incessantly occupied therewith during the past two months.

As I stated to you in advance, your gas, in common with all others containing petroleum products, presents to the gas-analyst certain difficulties which do not occur in the case of gas made from gas-coal. These arise, as I then informed you, chiefly from the presence—maintained by me for at least seven years*—in gas from petroleum of a special series of hydrocarbon gases, generally believed not to exist in gas from coal, known as the "paraffine series;" *ethane, propane, butane,* and *pentane.* These hydrocarbons formed from petroleum, to which your gas, as I have since determined with precision, owes over one fourth of its candle-power, are not amenable to the absorbent action of sulphuric oxide, the agent employed for the "ethylene series," the illuminant hydrocarbons met with in ordinary coal-gas analysis. With your gas it has, therefore, been necessary to try new processes in the hope of solving this new problem. The processes I have devised and tested, though not as yet perfected, or as completely successful as I could wish, have nevertheless thrown valuable light upon the constitution of your complex gas, and have developed facts which I regard as of much interest both to science and in practice.

A laboratory was fitted up by me at your works, adapted for ordinary eudiometry as well as for my own peculiar class of methods (published three years since), called by me *Train-Analysis,* or Gravimetric Analysis of Gaseous Currents; the only methods as yet discovered by which any success could be hoped for in work of this kind. In these new methods large volumes of gas are operated on many hundreds or thousands of cubic inches, or even many cubic feet, instead of only a fraction of one cubic inch, as in eudiometry. The gas is measured before and after absorption of its constituents by means of carefully-regulated and corrected gas-meters, with far greater proportional accuracy than is practicable in a eudiometer. Moreover, in addition to the determinations by volume, the absorbents are contained in pieces of apparatus *weighed* before and after the absorption, so that the *weights* of the different constituents are likewise ascertained. The additional device was introduced into this research, of numerous and careful *density-determinations* of the gas, by the effusion method of BUNSEN, before and after the action of the absorbents and passage through the meters, by which a new and valuable control is obtained of the direct determinations of volumes of constituents by the meters, as well as a knowledge sometimes otherwise unattainable, of the densities, in gaseous or vaporous form, of several important constituents.

Previous to the present research, I have made no successful application of this mode of gravimetric train-analysis, to the determination of *illuminant hydrocarbons,* but I now find it in the highest degree valuable for this purpose, particularly with regard to the olefines. Trains were fitted up, in which the gas is first measured through a meter charged with glycerine,* whose rate has been accurately ascertained, then passed, generally at the rate of about one cubic foot each two hours, through proper solid reagents in granulated forms, to remove traces of carbonic acid, sulphur, ammonia, and water, and then through a tube containing broken pumice saturated with fuming sulphuric acid, which was weighed (together with a succeeding tube containing solid caustic soda to retain the volatile acid products formed); the gain in weight, together with the loss of volume, as found by subsequent passage through a similar meter, giving us both the volume and the weight of the olefines (with any naphthalene, acetylene, and benzole that may be present). Determinations of the *density* of the gas, before and after passage through this train—making due corrections for the minute impurities and moisture present—give other data for calculating both the weight and density of the olefines, etc. The gas thus deprived of olefines passes from the meter at the tail of the train, into a small gas-holder constructed for the purpose, whence it can be taken for photometric, densimetric, or eudiometric experiments, or for passage through further trains. The results thus obtained with your gas of different dates may be stated as follows:

February 5.—On this day the first important analytical results were obtained, after spending some weeks in fitting up and testing apparatus and methods. The gas from the street main was found to have a density of ·7011 and a candle-power of 24·48. On passing through such a weighed train as described above, for absorbing the olefines (with benzole and its homologues, acetylene and naphthalene†), by means of the ordinary solution of sulphuric oxide in oil of vitriol ("fuming sulphuric acid"), the absorption by volume was found, by two experiments, each made upon 1·5 cubic feet of gas, to be 8·74 and 8·86 per cent, the mean being 8·8 per cent. The gain in weight of the sulphuric oxide tubes (of which, for certainty, three were used in the train—the absorption and consequent deep-brown coloration, and evolution of heat, appearing in the first one only) was at the rate of 71·1 grains per cubic foot; the whole increase of weight of the train, including aqueous vapor, etc., being 79·36 grains per cubic foot. The residual gas, which still *burned with a flame of considerable brightness,* having been passed into the holder, was then conducted into the adjoining photometric room through glass tubes, and its candle-power carefully determined to be 6·59. This residual candle-power must, of course, be attributed to the class of hydrocarbon gases I have referred to above—the paraffine homologues, which, under these circumstances, are not absorbed by sulphuric oxide. To make doubly sure of this remarkable result, this sample of gas was again passed from the holder through the two meters, with a fresh train intervening, made up of two freshly-charged sulphuric-oxide tubes and their attachments. The two meters now moved together exactly, revolution after revolution, till the holder was empty; no absorption or coloration of the pumice appearing, and the gas burning at the tail of the train with the same luminosity as before. This first series of experiments having proved the accuracy of my anticipation, and the fact that a large proportion of the paraffine homologues exists in your gas, the investigation proceeded at once with all possible diligence.

February 7.—New trains having been prepared, the former experiments were repeated with still more care. The gas from the street main with a density of ·7032 (mean of 3 determinations) gave an absorption of olefines, etc., per cubic foot = 77·05 grains. The volume of these hydrocarbons, by five successive experiments, upon 864 cubic inches each, was 9·7, 9·8, 9·25, 9·86 and 8·9—mean = 9·5 per cent of the gas. This residual gas possessed apparently somewhat more candle-power than in the previous case, and again on passing through a fresh train was not in any way changed in volume or otherwise.

February 13.—New and powerful trains and other extensive arrangements having been completed on this day, an elaborate series of experiments, including eudiometry, densimetry, and photometry, was begun

* See *Am. Gas-Light Journal* for April 3d, 1871, vol. xiv., page 104. A letter from me to Mr. H. H. Edgerton is here quoted, dated December 29th, 1870, in which occurs the following in reference to the gasifaction of petroleum and naphtha: "The decomposition is generally much more complex, and the higher members of the series, as found in petroleum" (that is, the series of paraffine homologues), "are generally split up partly into the lower members, which up to C_4H_{10}, as above, are permanent gases at ordinary temperatures." This citation has historical interest, in view of recent discussions.—H. W.

*The mixture suitable is about half good glycerine of density 1·25, and half water.

† The amounts of acetylene and naphthalene in this gas were found to be very trifling. That of benzole is more appreciable.

upon the gas of this date. The density-determinations of the gas from the street main were three in number:

·6806
·6848
·6869

Mean, ·6844

The total condensation in the train was 75·96 grains per cubic foot, including 74·19 grains of olefines, etc.: the volume of these latter being—as the mean shrinkage of a very large volume of the gas passed for the whole day through the train.—9·29 per cent. The candle-power was 24·32. It may as well be here stated that other photometric determinations were subsequently made by me, all with great care and precision; none of which have given me a result below 24 candles, taking as a standard for the five-foot measurement the test-meter of the American Meter Company used by you.

After absorption of the olefines, the density of the residual gas was:

·5929
·5968
·6006

Mean, ·5968

Computation here proves that 1000 cubic feet of your street gas, at 60° Fahr., weighs 364,800 grains, or 52·11 lbs. avoirdupois, and contains 74,190 grains, or 10·6 lbs. of olefine hydrocarbons. The mean density of the latter constituents is found from these figures to be 1·5, which is somewhat higher than that of propylene (= 1·455), as well as of a mixture in equal proportions of—what are doubtless its chief ingredients:

Ethylene (olefiant gas), density	·968
Propylene, density	1·455
Butylene, density	1·940
Mean	1·454

Four per cent of *benzole-vapor* (density = 2·7) in such a mixture, would bring its density up to about that which was found. The above figure for the mean density of the olefine hydrocarbons = 1·5, is computed from the loss of volume as shown by the meters, with the actual increase of weight of the tubes in the train. It is readily controlled—and the precision of this new system of gas-analysis conclusively demonstrated—by computing it in another way, from the loss of volume, with the *densities* of the gas before and after passing the train. Thus: the 90·71 cubic feet remaining after absorption of 9·29 per cent of olefines from 100 feet, weighs, by its density as found = ·5968 × 533 × 90·71 = 28,855 grains (one cubic foot of air at 60° Fahr. = 533 grains). This, together with 175 grains of moisture, etc., also condensed, being deducted from 36,480 grains (the weight of 100 feet of the street gas computed from its density), leaves for the weight of the 9·29 volumes per cent of olefines 7450 grains; whence we get again the density = 1·505. [It may be remarked that the densities of the olefine gases, as computed from the analyses of February 5 and 7, were then a little higher, 1·516 and 1·521.]

The Paraffines.—On this day, February 13th, experiments were begun, and continued for many days, with great labor, with the object of separating the gaseous paraffine homologues, proved as above to be largely present in this gas: by the action of *bromine* upon the residual gas, after it has passed the tubes containing sulphuric oxide. It is well known that marsh-gas is not at all acted upon by bromine, unless in sunlight, but it is equally well recognized that all the other members of this homologous series are violently attacked, even in the dark, by this potent agent. SCHORLEMMER, THORPE, and YOUNG, and other chemists, have described many of the products of these paraffine-brominations. There appears a tendency to form dibrominated compounds, of very high boiling-points. For example, the hydrocarbon *pentane*, C_5H_{12}, whose boiling-point is about 86° Fahr. (and which is no doubt contained as vapor, in your gas), forms the product $C_5H_{10}Br_2$, whose boiling-point is as high as 367° Fahr.; and *butane*, C_4H_{10}, which boils at the freezing-point of water, would form $C_4H_8Br_2$, the boiling-point of which would be about 345° Fahr. The latter is as yet unexamined. On the assumption that this bromination would be a simple matter of substitution of bromine for hydrogen, the only *gaseous* product being hydrobromic acid, trains were fitted up with flasks of liquid bromine, and provided with tubes of granulated pumice soaked in caustic soda, to absorb the gaseous acid, together with the excess of bromine-vapor. These were kept from the light during action. On February 13th such a train yielded, in a series of experiments on 173 cubic inches each, the following absorptions: per cent—5·1; 5·15; 5·2; 5·02; 5·03; 5·25. On a subsequent day, a similar train gave a series of closely agreeing figures averaging 5·65 per cent of the street gas.* Before deciding upon the value of this method, however, it was necessary to make analyses of the residual gas, after passing the bromine train. Such analyses (which, to save space, will not be quoted here) showed that there was, during the reaction, a large production of *marsh-gas*, this being verified also by the fact that the density of the gas underwent very little decrease during the reaction. In the last case above, gas freed from olefines, of density ·632 was only reduced by bromine to ·599. One conclusion to be drawn from these facts is this: that as no marsh-gas can be evolved from any of its homologues, without expansion of volume, hence the condensation of 5 to 5·5 per cent shown above, is necessarily *less* than the volume of paraffine gases condensed by the bromine, and that this method may at least be regarded as indicating a *minimum* proportion of these hydrocarbons. It will be shown below that the paraffines can not well be admitted to exist in your gas in a less proportion than 7 or 8 per cent.

The Water-Gas.—It was found impracticable to arrive at a full comprehension of the constitution of your gas, without most careful analyses and density-determinations of the water-gas, which forms its main constituent, by volume. February 13th was one of the days on which samples were secured of the water-gas for eudiometry, and on which sets of most careful density-determinations were made, at intervals, during the time of running of the analytical trains. The mean densities were as follows:

1.—·4900
2.—·4900
3.—·4935

Mean of all, ·4912

* The quantity of bromine taken up was something quite surprising, being in the neighborhood of an ounce for each cubic foot of gas previously freed from olefines.

Eudiometry by explosion gave as follows:

		Multiplied by the densities × ·01.		
Hydrogen	49·32	×	·000693	= ·0342
Marsh-gas	7·65	×	·00553	= ·0423
Carbonic oxide	37·97	×	·009674	= ·3673
Carbonic acid	·14	×	·0152	= ·0021
Nitrogen	4·79	×	·0097	= ·0465
Oxygen	·13	×	·01106	= ·0014
	100·00	Comp'd density,		= ·4938

The densities here used for the several gases are those adopted by BUNSEN. Determinations of carbonic oxide, made by absorption with chloride of copper, gave as a mean 38·46 per cent. The closeness of correspondence of the densities by computation and experiment leaves no doubt of the correctness of the above tabulated composition.

(TO BE CONTINUED.)

THE RAILROADS OF THE UNITED STATES IN 1877.

From advance-sheets of *Poor's Manual* (the eleventh annual number) we take the following:

"The depression of the three previous years still continues. Not only has there been a considerable decline in the construction of railroads, but the earnings also show a larger relative decrease than at any period since the first publication of the *Manual*. The number of miles of railroad opened during the year 1877 was 2177, against 2657 for 1876, 1758 miles for 1875, and 2305 miles for 1874. The largest number of miles built has been in New York and Pennsylvania, and in narrow-gauge lines in Ohio, Iowa, and Texas. No new lines of any considerable magnitude have been undertaken. The tables which follow will show in what sections there has been any considerable increase.

"The gross earnings of all the roads whose operations have been reported have equaled $472,909,272, against $497,257,959 for 1876 and $503,065,505 for 1875. The general result of the operations of our railroads for the last seven years is shown in the following statement:

Statement showing Miles of Railroad, Capital Account, Earnings, etc., for seven years.

YEAR.	Miles operated.	Capital and funded debt.	EARNINGS. Gross.	Net.	From freight.	From passengers.	Dividends paid.
		$	$	$	$	$	$
1877	74,112	4,568,597,248	472,909,272	170,976,697	342,859,222	130,050,050	58,556,312
1876	73,508	4,468,591,935	497,257,959	186,452,752	361,137,376	136,120,583	68,039,668
1875	71,759	4,415,631,630	503,065,505	185,506,438	363,960,234	139,105,271	74,294,208
1874	69,273	4,221,763,594	520,466,016	189,570,958	379,466,935	140,999,081	67,042,942
1873	66,237	3,784,543,034	526,419,935	183,810,562	389,035,508	137,384,427	67,120,709
1872	57,323	3,159,423,057	465,241,055	165,754,373	340,931,785	132,309,270	64,418,157
1871	44,614	2,664,627,645	403,329,208	141,746,404	294,430,322	108,898,886	56,456,681

"It will be seen by the above that the gross earnings have fallen off $24,348,687, and the net earnings $15,476,055, as compared with 1876.

"The ratio of net to gross earnings was 36·16 per cent, as against 37·5 per cent for 1876, equal to an increase of 1·36 per cent in the operating expenses, as compared with the preceding year. The decrease in earnings from freight has amounted to $18,278,154; and in passenger traffic, $6,070,533; the percentages of decrease being respectively 9·5 and 9·7 per cent. The dividends have fallen off $9,483,356; and are less than for any year since 1871. The total amount of capital stock on which dividends were actually paid was $835,038,896, giving an average rate of 7 per cent. No dividends were paid on any of the railroads in the States of Arkansas, Colorado, Florida, Kansas, Louisiana, Mississippi, Missouri, Nebraska, Oregon, Texas, and Vermont—nor excepting on leased lines in Iowa and Minnesota.

"The principal decrease in earnings has been in the Middle States, due partly to the depressed condition of the coal trade, and partly to the falling off in passenger earnings as compared with 1876, the Centennial year.

"The elaborate tables heretofore printed in the *Manual* are omitted this year; but the final results, the only important feature, are given in full detail. There is added a table reducing these results to the unit of 100. From this it will be seen that for each 100 miles of railroad in the United States there are 22·8 miles of second track, sidings, etc.; 20·1 locomotives; 15·2 passenger cars; 4·7 baggage, mail, and express cars; and 495·3 freight cars of all kinds.

"The capital stock aggregates, $2,921,507 for each 100 miles; the funded debt, $2,848,308; the floating debt, $300,078; and the total cost of construction and equipment, $6,069,893; equal about to $60,699 per mile of completed road.

"The gross earnings per mile were, $6380.94; operating expenses (63·85 per cent), $4074; net earnings, $2306.90. Interest paid on bonds per mile of road, $1248.04; dividends paid on stock, do., $739.52. The ratio of interest paid to total funded debt was 4·39 per cent; of dividends to aggregate capital stock, 2·53 per cent. In 1871, with only two thirds as many miles of railroad in operation, and a little more than one half the capital stock, the dividends aggregated $56,456,681, equaling 4·19 per cent of the capital then invested."

THE AMERICAN METALLURGICAL WORKS.

These works, which are located at Perth Amboy, New Jersey, are established for the purpose of treating ores by the Willard Roasting Furnace and Dr. RAE'S system of amalgamation. The works consist mainly of a 10-stamp battery, the Willard Furnace for desulphurizing the ores, two amalgamating barrels, and accessories. The ores are dried and reduced to a fine powder, mixed with a certain proportion of sawdust, and then thoroughly moistened with salt water, which is then introduced into the furnace, filling the cylindrical space and resting on the cast-iron perforated diaphragm: a fire is kindled on the grate under the bottom plate, which fire is, however, allowed to decline after the combustion of the ore mixture is started. The combustion of the mixture proceeds from the bottom, being sustained by a blast of air which is passed through it, and when the combustion ceases at the top the roasting is finished. It is claimed that this operation completely removes the sulphur.

The ore is afterward amalgamated in barrels, resembling the Freiberg barrels, and treated by Dr. RAE'S process.

We are informed by the superintendent that a recent run of about ½ ton of Georgia sulphurets gave a return of 98 per cent of the assay value.

We shall, probably, have more to say of these works when they have been in operation a little longer.

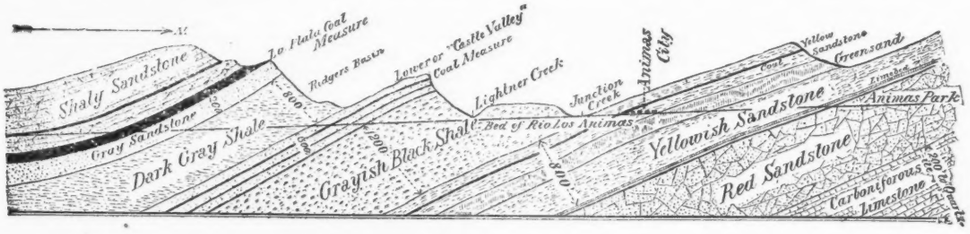
PRICES OF ENGLISH RAILS.—Iron rails, f. o. b. English ports, £5 per ton, and steel rails £5 15s. @ £6 10s. These prices nominal.

THE COAL FIELD OF LA PLATA COUNTY, COLORADO.

This remarkable coal field occupies a large portion of the southern half of La Plata County. It extends from the valley of the Rio Los Piños, near the eastern boundary, in a westerly course more than 60 miles in length, terminating at the southeast end of Ute Mountain. The line of outcrop varies in its course from southwest to west. As one goes west from Los Piños Valley the outcrop is seen near the crossing of Florida Creek, on the Pagossa Springs and Animas City toll-road. Thence through a high ridge to Rio Los Animas, 4 miles south of Animas City. Thence southwesterly across high ridges to the Rio La Plata. Thence westerly across the Mancos River to the Ute Mountain. The dip of the coal measure is south under the great basin of the San Juan Valley, and extending many miles into Northern New Mexico. The area of the coal field within the boundaries of La Plata County is something over 600 *square miles*. The general form of this area may be stated approximately as 10 miles wide at the west end, by 20 miles wide at the east line of the county, by 60 miles long from east to west. The Piños, Florida, Animas, La Plata, and Mancos rivers have all cut deep indentations into the northerly outcropping edge of the coal field, thus reducing the actual area to something near the figures above named.

GEOLOGICAL POSITION.

The coal field of La Plata County is in sandstones and shales of the Cretaceous age, divided into two distinct and well-marked measures—the upper and lower—about 1000 feet apart, corresponding to the lower and upper periods of the Cretaceous age. The lower coal measure occurs in a zone of shaly sandstone that is about 300 feet thick. The coal is in several thin beds, varying from 6 inches to two or three feet in thickness, and more or less interlaminated with shale and other impurities that render it worthless for *general* exploitation. The coal separated from the shale is of excellent quality for domestic use. The fracture is cubical and lustrous, and it crumbles into small fragments if long exposed to the weather. This lower coal measure, or the zone of sandstone in which it occurs, is underlaid by a heavy bed of dark or blackish-gray shale (1200 feet thick) containing calcareous seams and nodules called "Septaria," The lower portion contains a few small shells of a species that I have not been able to identify. They are a flat shell nearly round, with finely scalloped edges, and rarely larger than the thumb-nail. I think, however, they belong to the lower Cretaceous beds.



LA PLATA COUNTY COAL MEASURE.

Section from North to South on Line of Los Animas River.

The localities in which this lower coal measure can be seen are very numerous, extending along the whole line of foot-hills from the Rio Piños to the Utah line, but most prominent in the range of hills south of Animas Park, crossing the Los Animas River below the mouth of Lightner Creek, thence along the high bluffs south of the creek, and up the line of Wildcat Cañon near the road to Parrott City, and again at a point two or three hundred yards below the crossing of the La Plata River, and in the high ridges east and west of that stream.

Next above this lower coal measure is another heavy bed of dark gray shale, about 800 feet thick, then shaly sandstone, capped by a strong bed of light gray or whitish sandstone, completing a zone of about 200 feet thick. Upon this floor of grayish-white sandstone the great "*La Plata*" *coal bed* is found; and like the lower coal measure above described it extends from the east line of the county, westerly a distance of over 60 miles. This upper zone of coal I have named the "La Plata coal measure," because of its magnificent proportions and great extent in La Plata County. The Animas River crosses this great coal-bed about 4 miles below Animas City, at a point where the river runs nearly due south.

The "*strike*," or *course* of the coal-bed at this point is nearly N. E.-S. W. magnetic, but curves to a more westerly course as it approaches the La Plata River. Going east it retains its northeasterly course until it enters the basin of the Los Piños River, near the eastern boundary of the county. The "*dip*" of the coal-bed, at the point where the Los Animas river crosses it, is 20 to 22 degrees below the horizontal plane. In other portions of its course it lies much nearer the horizontal plane.

The *thickness* of the entire bed between the floor and roof is over 50 feet, measured at right angles with the dip of the beds, and contains about 40 *feet thick of good coal, free from shale.* The floor is of grayish-white sandstone; is covered with a thin layer of clay and clay shale, varying from an inch or two to a thickness of two feet. Upon this is a layer of compact, firm coal, 6 to 8 feet thick. Then comes a layer of tough, black shale, 1½ to 2 feet thick. Upon this is a bed of excellent coal, over 30 feet thick, with only small seams of shale at intervals of 4 to 10 feet. The "roof" is a tough, shaly sandstone, alternating with true shales for a distance of several hundred feet above the coal-bed. In this overlying formation there are two or three small beds of coal, one of which is large enough for exploitation, say 4 to 6 feet thick, judging from surface exposures.

The quality of the coal has been tested in a crude way by coking it in pits and heaps, and by use in blacksmiths' shops, stoves, and open fireplaces, in all of which it gives good satisfaction. It is strongly bituminous, cinders well, and forms masses of coke in an open fire. It is exceedingly rich in gaseous products, takes fire readily, and burns freely, leaving a brownish-gray ash. The percentage of ash, fixed carbon, and volatile matter I am unable to give, having never made or seen an analysis of the coal.

GENERAL REMARKS.

The quantity of coal in this great bed is practically inexhaustible. We know it extends over 60 miles in length from east to west, and dips south under the San Juan basin, into New Mexico. The dip of the beds at the point of outcrop, as above stated, is 20 to 22 degrees, but within a short distance south the beds flatten down within a few degrees of the horizontal plane, as shown by the accompanying geological section. No one can suppose that this entire field is available in the near future. For many generations to come the working of these beds will be confined to the line of outcrop at the most convenient points, such as the deep cuts made by the rivers that cross it, where levels may be run each way into the high ridges lying between them. In old and populous countries, like England and Western Europe, this entire coal field could, and would, be made available. But situated as it is, in a portion of the continent that can never support a dense population, and too far away from the seaboard to make it of great commercial importance, its value must be measured by the local demands made upon it for domestic and metallurgical purposes, and after a while for use by the railroad system that will connect La Plata County with other portions of the great West. While it may never be of great commercial importance in the way of export to more populous districts, it will unquestionably be a mine of inexhaustable wealth to La Plata and San Juan counties, on account of its coking qualities and adaptability to all kinds of metallurgical, mechanical, and domestic uses. The material interests of San Juan and La Plata counties are inseparably united and woven together by the drainage system of the San Juan River, by the physical features of the country, and their mutual dependence upon each other in many ways. While San Juan County has an exhaustless supply of the precious and useful metals: she can raise *no food to supply her mining population.* Her lowest mining camps are over 9000 feet above the sea, and her highest peaks are over 14,000 feet above tide-water. She sits like an eagle upon the highest and most rugged portion of the great Rocky Mountain chain. La Plata County hangs upon her southern border, and spreads south over the timbered slopes, foot-hills, grassy meses, and rich narrow valleys along the streams that flow south into the San Juan River. La Plata County can raise vast quantities of meat, vegetables, and grain, and can supply any requirements for timber, lumber, and coke or coal. She can furnish winter quarters and comfortable homes for the mining population of San Juan, and all the comforts of a mild and healthy country. La Plata County is equally dependent upon San Juan County for her future prosperity. Were it not for San Juan's peculiar character, situation, and needs, La Plata would have *no market* for any thing but sheep, cattle, and horses that could be driven out to distant markets.

It will thus be seen that if San Juan County is prosperous, LaPlata may be, if she pursues a wise and liberal policy toward her neighbor and best customer. Above all things, she should be liberal in contributions to and encouragement of the construction of good roads and trails into the mining centers of San Juan and Ouray counties. Good roads and cheap freights between producers and consumers are indispensable; without them there can be no common interests, unity of purpose, or good neighborship.

J. E. CLAYTON.

LA PLATA COUNTY, Col., June 10, 1878.

GOOD EFFECTS OF PEACE PROSPECTS IN EUROPE.

Messrs. SANDERS BROTHERS, of London, under date of June 13th, say:

"To-day the European Congress meets at Berlin. Already stocks, metals-produce, and most articles have, to some extent, been stimulated by the hope and belief that peace will be the outcome of this meeting. This seems increasingly probable when we find the great Imperial powers of Europe thoroughly frightened at social democracy, the outcome of militaryism, tending to show them they have enough to attend to at home, and that only with peace can they expect the improved business which will ameliorate the condition of the masses of the people.

"We look, therefore, for a gradual and steady improvement in the volume of business, and in the prices of most of our articles, iron alone seeming, perhaps, an exception, for most of our old markets now not only produce sufficient for their own wants, but, in many cases, have become competitors with this country."

EXPORTS OF IRON FROM GREAT BRITAIN TO THE UNITED STATES for the first five months of 1876, 1877, and 1878:

	1878.	1877.	1876.	1878.	1877.	1876.
	Tons.	Tons.	Tons.	£	£	£
Iron—Pig	10,761	19,722	16,770	42,473	82,293	75,485
Bar, angle, bolt, and rod	2,196	1,775	853	19,291	20,502	10,992
Railroad, of all sorts	152	2,483	96	1,966	19,137	2,403
Hoops, sheets, and plates	257	1,456	1,256	3,789	18,997	18,776
Cast or wrought, and all other manufactures unenumerated	860	1,127	2,355	18,716	26,791	44,826
Tin plates	41,992	43,037	36,109	768,375	856,404	812,901

THE MICROPHONE.

The first exhibition on this side of the Atlantic of this peculiar and most ingenious adaptation of the principle involved in Edison's "Carbon Transmitter," and which, since its recent announcement and exhibition in London, before the Royal Society, has aroused the curiosity and admiration of the scientific world, appears to have been made on Friday, June 7th, at the private office of the Assayer of the United States Mint in Philadelphia. The instrument there experimentally tried was constructed by Mr. A. E. OUTERBRIDGE, Jr., one of the chemists of the Assay Department, and the trial tests of the device made at the meeting in question fully demonstrated the correctness and corroborated the claims of Prof. HUGHES, who appears to have substantial claims to the invention of an instrument which does for sound what the microscope does for light.

The experimental verification of the claims of Professor HUGHES's exhibitions abroad was complete and satisfactory.

The gentle drawing of a fine camel's-hair brush across a piece of smooth pine board produced in the receiver a noise resembling the violent contact with the wood of a coarse rasp. The sound of the falling of newly-coined silver dollars, as they fell from the coining-press in a distant room separated by closed doors, was distinctly distinguished by the auditors. The faintest whisper was distinctly conveyed over the wires, nearly as fine as a human hair; the footsteps of a captive fly were rendered quite audible, and the impact of a single hair on the sounding-board was distinctly recognized at the receiver. The capabilities of the instrument in intensifying sound may, therefore, be regarded as having been experimentally verified. It would be premature to venture an opinion upon the possible adaptation or utility of so unexpected an extension of the functions of the telephone; for we feel almost justified, in view of the remarkable and rapid advances that the past year or two have given us, in blotting out the word *impossible* from the lexicon of science.

While we may rejoice and marvel at the wonderful results that have been achieved in this fruitful field of invention and discovery, we must regret that the question of originality of discovery threatens to become the ground of a serious dispute between Prof. HUGHES and Mr. EDISON. Of the merits of this controversy we know very little, and since both gentlemen are Americans, our interest in the result of the threatened controversy is materially lessened. Mr. EDISON, it is understood, affirms that Prof. HUGHES has simply amplified upon and developed discoveries and inventions which he (EDISON) claims as his own; and personally we feel very much gratified that he has done so. Whatever may be the value of the personal claims of the gentlemen whose names are here involved, we believe it is not disputed that Prof. HUGHES was the first who succeeded in producing the microphone, and so far, therefore, as the actual realization in practice of the principles involved is concerned, he certainly has a *prima-facie* claim to its origination that it will be difficult for Mr. EDISON to break down. Mr. EDISON has earned so many laurels by his achievements in the field of telegraphic invention and discovery, that he may well afford to pass by the present controversy without fear of being overshadowed. The field is not thoroughly gleaned, and no one is as well prepared to reap a fresh harvest of victories from it as is Mr. EDISON.

The nature of the invention of the microphone will be understood from the following account abstracted from the paper before the Royal Society of London, which was communicated by Prof. HUXLEY on the 8th of May last.

"The microphone in its present form," says Professor HUGHES in his paper, "consists simply of a lozenge-shaped piece of gas carbon, one inch long, one quarter inch wide at its center, and one eighth of an inch in thickness. The lower pointed end rests as a pivot upon a small block of similar carbon; the upper end, being made round, plays free in a hole in a small carbon block, similar to that at the lower end. The lozenge stands vertically upon its lower support. The whole of the gas carbon is tempered in mercury, in the way previously described, though this is not absolutely necessary. The form of the lozenge-shaped carbon is not of importance, provided the weight of this upright contact piece is only just sufficient to make a feeble contact by its own weight. Carbon is used in preference to any other material, as its surface does not oxidize. A platinum surface in a finely divided state is equal, if not superior, to the mercurized carbon, but more difficult and costly to construct. I have also made very sensitive ones entirely of iron.

"The best form and materials for this instrument have not yet been fully experimented on. Still, in its present shape, it is capable of detecting very faint sounds made in its presence. If a pin, for instance, be laid upon or taken off a table, a distinct sound is emitted, or if a fly be confined under a table-glass, we can hear the fly walking, with a peculiar tramp of its own. The beating of a pulse, the tick of a watch, the tramp of a fly, can thus be heard at least 100 miles distant from the sources of sound. In fact, when further developed by study, we may fairly look for it to do for us, with regard to faint sounds, what the microscope does with matter too small for human vision."

Professor HUGHES then enters into an argument designed to show that the results are due to the changes produced by molecular action, and explains his tube transmitter, which may be understood without the diagram which accompanies it. The letters *A*, *B*, *C*, etc., simply refer to the separate pieces of carbon in the tube.

"The tube transmitter consists of an exterior glass tube two inches long and one quarter of an inch in diameter. In it are four separate pieces of willow charcoal, each one quarter of an inch long, and two terminals of the same material. The terminals are fastened in the tube, and connect exteriorly with the line and interiorly with the four loose pieces.

"Here *A* is made to press on *B*, *C*, *D*, *E*, and *F*, until the resistance offered to the electrical current is about one third that of the line upon which it is to be employed. It may be attached to a resonant board by the ends *A* or *F*. If the result was simply due to vibrations, we should have *A* and *B* making greater contact at a different time from *E* and *F*, and consequent interference. If it was a simple shaking or moving of *B*, *C*, *D*, *E*, and *F*, it could produce no change, as if *B* pressed more strongly on *C*, it would be less on *A*, and also if the tube was attached by the center we should have no effect: but if the effect is due to a swelling or enlargement of *B*, *C*, *D*, *E*, *F*, it would make no difference where it is attached to the resonant board, as is actually the case. Again reduce the pressure of *A* upon *B*, etc., until they are not in contact, and no trace of current can be perceived by shaking the tube. The instant the sonorous vibrations pass in the tube, there is electric contact to a remarkable degree, which could only have taken place by the molecules enlarging their sphere under the influence of the sonorous vibrations."

Professor HUGHES, in conclusion, says that he does not intend to take out a patent, as the facts he has mentioned belong more to the domain of discovery than invention. He believes that before long inventors will improve on the form and materials employed.

The London *Spectator*, in commenting upon the performances of the microphone, waxes eloquent over the possible uses to which this remarkable instrument can be put. It says:

"The telephone brings from a distance without magnifying—indeed, not without lessening greatly the sound it transmits—and then the microphone magnifies it, so as to make it even far more audible than it was to the ear of a close listener. The invention depends on so breaking, by the interposition of charcoal permeated by fine atoms of mercury, the currents transmitted by the telephone wire, that the sound is vastly increased by the interruption—just as heat is known to be vastly increased by a similar interruption of a current, even to the turning of metallic wire to a red or white heat. Thus the microphone will make a minute sound audible, whether it be close or far off. It is said that the march of a fly over the vibrating plate is rendered as audible by this invention as the tramp of a horse, and that the mere breathing of the fly is heard almost like the trumpeting of an elephant. And this, as we understand, is just as true of a sound transmitted from a distance as of a sound close at hand.

"We do not understand that it would be in any way impossible, for instance, to get a physician living in London, with the help of the microphone and the telephone, to report on the sounds in the lungs and heart of a patient in Birmingham. The stethoscope itself should be superseded by the microphone. But not only should the stethoscope be superseded, but the range of the new instrument should be enormously extended by the telephone, the two playing into each other's hands, so that a whisper in Dublin might be heard as a shout in Holyhead. It is this extraordinary power of combining the telephone and microphone together which opens out such strange prospects as the result of this discovery. Indeed, associated as both may be with the phonograph—the instrument which records and bottles, as it were, speech, till some convenient future occasion for unbottling it—it is quite conceivable that the whisper of a dying statesman, like CAVOUR'S—'I will have no state of siege, any one can govern with a state of siege'—might be repeated, after the expiration of a hundred years, in a hundred cities, each of them hundreds of miles away from the place where it was first uttered, in a voice audible to a great assembly, instead of only to the ear of an intently-listening friend.

"But the most curious results which we can at present anticipate from this marvelous microphone are results due not so much to the transmission of these sounds, either in space or time, as to the discovery, through its means, of new sounds now inaudible. The microscope does not show us new colors, and the microphone will not show us new sounds. But just as the microscope renders not only visible, but large and conspicuous, what we could not previously discern simply from its minuteness, so the microphone will render distinct and even loud what we could not previously discern, simply from the want of volume in the sound. The first result should be to provide those who are only deaf—whose auditory nerve is not destroyed—with a nearly perfect ear-trumpet. But far more curious results should follow. With the help of the microphone, it should be possible to hear the sap rise in the tree; to hear it rushing against small obstacles to its rise, as a brook rushes against the stones in its path; to hear the bee suck its honey from the flower; to hear the rush of the blood through the smallest of the blood-vessels, and the increase of that rush due to the slightest inflammatory action. In fact, the new instrument should add a hundred times as much to the means of investigating the facts of both vegetable and animal physiology, as the stethoscope added to the knowledge of the structure of the heart and lungs; for while the stethoscope only collected the sound, the microphone will magnify it.

"That, however, which strikes the imagination most in this wonderful discovery is not so much what it is sure to do, as the wonderful world of possibility it opens. It is almost certain that a ray of light strikes the surface on which it impinges with a definite force, and Mr. CROOKES certainly supposed that he had found the means of approximating to a calculation of that force. But if this be so, there must be a definite sound caused by light touching a surface, and the new instrument may enable us not merely to see but to *hear* light. It is quite conceivable that by the use of the microphone the chemist who is trying to analyze the spectrum of a star, may be enabled to *hear* the first ray of the star strike upon his spectroscope, and to listen to the gentle rain of rays which follows while the spectroscope is exposed to that star, and then to exchange that gentle sound for that of the torrent which would follow when he exposed his instrument to the moon instead of the star. We may find that the rippling of the light from Sirius has a sound quite different in character from the rippling of the light from Arcturus or the Polar Star; and all of these onsets of starry light, if they can be heard at all, must make a sound as inferior to the cataract which rushes from the sun as the dash of a brook."—*Polytechnic Review.*

DISCOVERY OF A SALT MINE.—The New York *Herald* of the 25th inst. has the following: A remarkable discovery of pure rock-salt has just been made in this State, near the little village of Wyoming, forty miles southwest of Rochester, on the Rochester and State Line Railway. On Tuesday, last week, a laborer, employed by a Mr. Everst, was sinking an oil well near the village, when at a depth of 1200 feet the drill struck a stratum of rock-salt which proved to be 100 feet thick. The full extent of the mine is not known, but it is supposed to cover a large territory, and that the salt marshes of Syracuse drain the bed. A document signed by the justice of the peace, the postmaster, and several merchants of the village, has been sent to this city, fully verifying the discovery. The salt has been examined by a scientific gentleman, and he says that it is the best rock-salt. Those familiar with salt say that this salt just discovered is pure enough to be shipped to market directly from the mine without receiving chemical purification.

Considerable excitement is the result, and it is said that if the bed proves of wide extent, it will revolutionize the salt trade of the country, and destroy the evaporating industries of the great salt monopolies which have long received exorbitant government protection. There are but few extensive mines of pure salt in the world. There is one in Valencia, one in Poland, and one in Armenia, near Mount Ararat.

TUNNEL TIMBERING AND ARCHING.*

(*Continued from page* 422.)

DISCUSSION OF THE CHARACTERISTIC FEATURES OF THE ENGLISH SYSTEM.

In the English system proper, as described above, in its application in soft ground at Musconetcong Tunnel, and in loose rock at the Hauenstein Tunnel, we may note the following distinctive characteristics:

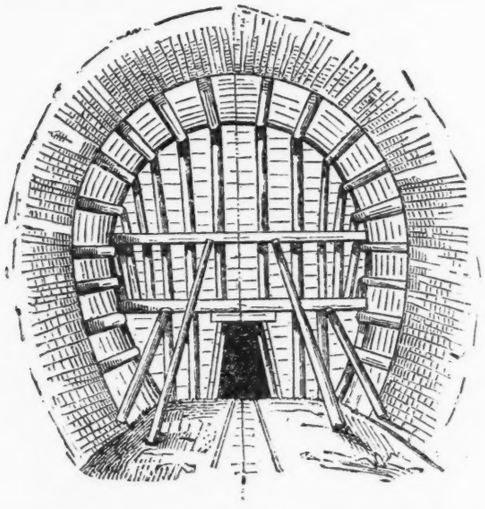
Ventilation and drainage (where there is a bottom-heading) are favored. The advantages of the large free space afforded by the system can not be over-estimated. The material can be easily and cheaply removed, in the large majority of cases being either simply stoped down from the breast, or run into the cars in the bottom-heading.

In the large majority of cases also, where ordinary care is used, the timber can be drawn in the usual manner, making a great saving in time, labor, and material, as not only is the timber itself saved, but also the great labor incurred in bringing down new sets of bars for each section.

Moreover, as the upper bars are drawn after the arch is in, this system has the advantage of not interfering with the masons so much as in the systems where all the timber is removed as the arching goes up.

There has been the objection raised against the English system that in it the miners must be idle while the masons work. To this the reply is, that almost always alternating working faces can be arranged where the masons and miners exchange work as their respective departments are completed. Moreover, the fact that the miners' and masons' work is so arranged as to be carried on in different sections and at different times, is justly claimed as one of the chief advantages of the system, as thereby they avoid interfering with each other.

As to the building of the mason-work, it is probably executed under more favorable conditions than in any other system. Where there are



FREE OPEN SPACE FOR THE MASON-WORK AFFORDED BY THE ENGLISH SYSTEM.

many break-ups, its cost may occasionally be enhanced by delays in transportation of material, if there be no shafts and all material is to be transported through one bottom-heading; but, in general, the conditions for cheap arching, well built, are most favorable, for the masons work undisturbed in a large, free space (see illustration), and they can consequently build quicker, and consequently more cheaply, than where they are cramped for space; moreover, the same conditions secure better execution and bonding of the masonry itself, and this is especially felt where an invert is required, which can, of course, be at once put in at the outset.

These advantages are, of course, seen at their best where the work goes on in its regular manner, without requiring extraordinary timber to be introduced as additional support for the roof and face. Where additional props are added, they, of course, in a measure, decrease the ease of working; but in the large majority of cases, it has been found that the system is all-sufficient even in very bad ground. Its opponents, and among them prominently Mr. RZIHA, urge that because accidents and falls have occasionally occurred in the English (as in other systems), it is not of universal application, and should be abandoned in favor of a stronger system (the Austrian).

It is, however, well established by an experience of thirty or forty years in England, and by an extensive experience on the Continent, that the English system has met with great and continued favor; and with most cases of soft-ground work it will be found a safe and unquestionably cheap plan of work. Where ground is excessively heavy, unquestionably more timber will be needed, placed, in certain cases, at closer intervals, and in that case the Austrian system of heavy timbering may doubtless well be applied.

Still, at Musconetcong, in part of the soft ground the headings passed through a belt of as wet and treacherous material as can well be met; and the Hoosac record shows that there the English system met with material almost similar to the dreaded Polish Kurzawka, certainly quicksand and running ground of the worst type. It is rarely that a system of timbering can be subjected to a more severe trial than it was in these two tunnels.

(TO BE CONTINUED.)

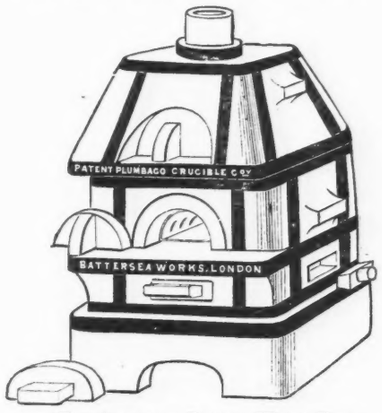
* Condensed from advance proofs of *A Treatise on Tunneling, Explosive Compounds, and Rock Drills.* By Henry S. Drinker, Mining and Civil Engineer. Published by John Wiley & Sons, New York. (Copy-righted.)

ASSAYERS' OUTFITS.

The School of Mines, Columbia College, has received from the Patent Plumbago Crucible Company, Battersea Works, London, Eng., through their agents, Messrs. FRASSE & Co., 62 Chatham street, a very complete assortment of their assaying and melting furnaces, arches, muffles, triangular and round sand crucibles for melting gold, retorts, tubulated and plain scorifiers, roasting dishes, gold pots; crucibles for copper, iron, tin, lead; skittle-pots, and other articles of their manufacture too numerous for us to mention. This collection makes a fine appearance, and is well worthy of the examination of any one interested in assaying. The crucibles of this company are celebrated for their wonderful endurance under heat, for the small amount of gold absorbed by them, and the superiority of their shape over the old styles. The skittle-pots are dome-shaped at the top, which prevents the ebullition of the fluxes, and makes them particularly well suited for all refining purposes. The School of Mines is very well pleased with the articles furnished it, and as far as tested it finds that they give good satisfaction. The assay furnaces are fast winning an enviable reputation in this country. These goods are being extensively used throughout the mining districts. The crucibles are very largely used by gold and silver refiners and melters in England. Their gold pots are smooth, and of the correct porosity. This company was awarded the only medals in London, 1862; Dublin, 1865; New Zealand, 1865; Oporto, 1865; Paris, 1867; only first-class medal (silver), Havre, 1868; Amsterdam, 1869; Moscow, 1872, only first-class awards.

PORTABLE FURNACES. (*Iron Bound.*)

FOR MELTING GOLD, SILVER, COPPER, ETC.



FOR ASSAYING, DENTAL WORK, ETC.

The goods manufactured by this company are used by the United States Mints, who, having satisfied themselves that they are of a superior quality, continue to send their orders for same. In addition to the foregoing awards, this company received a medal at the Philadelphia Centennial Exhibition.

The following indorsements speak for themselves:

THE MINT OF THE UNITED STATES AT SAN FRANCISCO, CAL.

OFFICE OF THE ASSAYER,
SAN FRANCISCO, Cal., April 19, 1877.

SIRS: I have tested and used the Assay Crucibles and Annealing Cups, and can with assurance recommend their superior quality and durability.

Respectfully yours, etc., C. D. MUNSON, Assayer.

STATE ASSAY OFFICE,
SAN FRANCISCO, May 1, 1877.

We have given the Crucibles and Muffles a fair trial, and can recommend them for use of assayers and chemists.

Yours truly, FALKENAU & REESE.

ASSAY OFFICE OF LEOPOLD KREB,
SAN FRANCISCO, Cal., April 16, 1877.

GENTLEMEN: I have subjected the Muffle, Crucibles, and Dry Cups received to a strict trial in my furnaces, and otherwise, and found them to be of a superior quality to any thing of the kind I had heretofore used.

Yours truly, LEOPOLD KREB, Assayer.

ASSAY OFFICE OF RIEHN & Co.,
SAN FRANCISCO, May 1, 1877.

GENTLEMEN: We have subjected the Clay Crucibles, Scorifiers, Muffles, and Dry Cups manufactured by the Patent Plumbago Crucible Co., Battersea Works,

London, Eng., to a severe test in our furnaces, and unhesitatingly recommend their use by the assayers and chemists of this coast. We shall continue to use them. Respectfully yours, RIEHN, HEMME & Co.

Persons desiring to inspect or obtain these goods can do so by calling on Messrs. FRASSE & Co., 62 Chatham street, New York. See advertisement in this paper.

THE METALLURGY OF NICKEL.

By M. Badoureau, in Annales des Mines, Translated in Iron.

[*Continued from page* 424.]

II. *Treatment of the Skin of Cobalt.*—The cobalt skin was melted in the reverberatory furnace with an excess of bisulphate of potash. The first result was the formation of double sulphates:

$$SO_3KO,SO_3CoO\ ;\ SO_3KO,SO_3NiO\ ;\ SO_3KO,SO_3FeO.$$

As the temperature rose, the two latter of these salts were decomposed; there remained a neutral sulphate of potash and metallic oxide. The sulphuric acid combined with the latter was given off. If treatment had gone beyond the point desired, the double sulphate of potash and cobalt would have been decomposed like the rest. Taken up again and treated with water, there was a solution of double sulphate of potash and cobalt in an excess of potash sulphate and a residue of iron and nickel oxides. The solution was treated with potash carbonate, there was a precipitate rich in cobalt, which was washed, calcined, and sold. As to the residue,

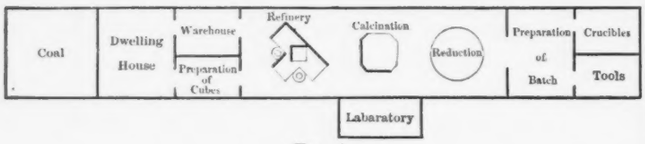


FIG. 1.

which consisted of nickel and iron oxides, it was charged again into the refinery reverberator with the speiss. See Fig. 1 for place of furnace.

III. *Stamping Refined Speiss.*—The speiss was stamped at a set of 12 stamps, lifted by a water-wheel. The stamping house was 200 meters from the works at Mandling.

IV. *Roasting Refined Speiss.*—When refined and stamped, the speiss was roasted in a reverberatory furnace, which I saw at Mandling. The

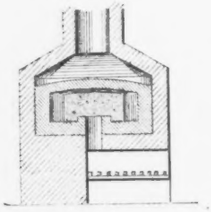


FIG. 2.

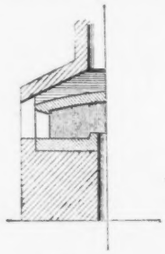


FIG. 3.

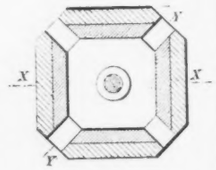


FIG. 4.

diagrams Figs. 2–4, show its arrangement. The hearth is four-square and measures 2 meters on each side; the fireplace is below the hearth, on which the gases arrive by an opening in the center surrounded by a circular bridge. At each of the four corners of the furnace are working doors, which give access to every part of the hearth. The gases make their way out by the working doors, and pass into funnels, go back above the furnace vault, and finally escape by the chimney. The charge of speiss weighs 200 kilos.; the operation lasted 24 hours, and a little under 4 stères of wood were consumed. At the 20th hour of the operation a mixture consisting of equal parts of carbonate of soda and saltpeter was introduced into the furnace, and 10 per cent of this mixture was consumed. The first result of the operation was the formation of arseniates, which were reduced by the uncalcined speiss, and arsenious acid was produced, part of which was given off, while another part remained behind as an arsenite. At the end of the operation the saltpeter converted the arsenites into arseniates, the carbonate of soda then reacted on the metallic arseniates, producing alkaline arseniate and metallic oxides.

V. *Washing.*—The products of calcination were roasted. For this purpose were used trunks of trees, hollowed out, and turning on horizontal axes (Fig. 5). The stuff was mixed with water and stirred up with a wooden spade. From time to time the tree trunk was tilted and water poured off, poor water being thrown away, while rich water was evaporated, and arseniate of soda collected from it. This arseniate was utilized in the oxidizing melting of speiss. The residues from washing were almost entirely composed of nickel oxide.

FIG. 5.

EXAMPLE FROM THE LEOGANG WORKS.

At Leogang there is treated a speiss extremely free from iron and yielding cobalt silicate. The extraction of the cobalt should be carried out in a reverberatory furnace on a hearth of quartzose sand free from iron and from any clayey admixture. Flour paste may be used as a cement or a concentrated solution of alkaline silicate. The plan usually followed is to make a hearth with sand moistened with solution, and when it is made to wash it over again with solution, covering it up finally with charcoal on which the speiss is laid. The melting must be done rapidly, and blowing carried on so long as slag is formed. When no more slag rises, the charcoal is withdrawn, cold air is blown in, the slag skimmed off, and sand and charcoal again added. The shovel made use of is a wooden one. At the end of the operation a little sulphur is added to make the stuff more fusible. The cobalt is longer in separating than the iron. The result is a nickel speiss and cobaltiferous slag. This is divided into three classes: No. 1 contains iron, and is greenish blue in color; No. 2 is pure blue in color, and only contains cobalt; No. 3 is reddish blue in color, and contains nickel. The slag is broken up and picked for quartz, matte, and speiss. The nickel speiss is roasted for nickel oxide; the second slag treated for smalt. First and second slags are both melted with mispickel, and speiss is got which is subjected to retreatment.

CONVERSION OF MATTE OR SPEISS INTO OXIDIZED HALF-STUFF THE WET WAY.

Theory of Operation.—When we have to treat a matte or speiss containing both nickel and cobalt in any considerable proportion, the stuff should be dissolved in hydrochloric acid, to which can be added nitric acid, sulphuric acid, or saltpeter, and the metals got out by chemical precipitation.

Sometimes the matte is dissolved raw. The advantage of this proceeding is that only the quantity of acid necessary for dissolving the iron, nickel, and cobalt is made use of; the sulphate of copper remains insoluble, but, unfortunately, the residue contains nickel and cobalt as well. Most frequently the matte is calcined before being dissolved. When speiss is to be dissolved, it is invariably roasted, the arsenic being removed during roasting by one of the methods I have already detailed. When the hydrochloric solution is got, the different metals are successively precipitated by appropriate reactions. This operation is a delicate one on account of the small differences between the properties of the metals.

Should much iron be present in the solution, the plan is sometimes adopted of evaporating to dryness and calcining the residue. One part of the iron goes off as a volatile chloride, and another becomes an insoluble oxide; so that on reheating the stuff with water we get a solution which contains less iron than the initial solution, while it does not contain an excess of hydrochloric acid. Unless the workmen who carry out these operations are both skillful and careful, there will be considerable losses of nickel and cobalt.

Carbonate of lime is first added to the solution, and iron is thrown down at the same time as copper and arsenic, if any be present. Cobalt is next precipitated as a sesquioxide, by chloride and carbonate of lime. If there is much copper remaining in the solution, it can be precipitated with calcium sulphide. If but little remains, the solution is treated with lime, which precipitates the nickel as a protoxide at the same time as the remainder of the copper.

Example from Scopello.—There are prepared, per annum, at Scopello, 120 tons of matte of the following composition:

Ni	24	Fe	23
Co	6	S	35
As	12		
			100

I. *Dissolving Matte.*—After pulverization the matte is fitted into earthenware pots placed in wooden barrels, the space between the pots and the side of the barrels being filled with water heated by steam from an old boiler. The pots are closed by a round wooden stopper fitted with an open iron tube. Hydrochloric acid is added containing 33 per cent of HCl as a gas. The hydrosulphuric acid is given off at the iron tube and is lit; when the flame slackens, acid is added, and so on until the evolution of gas ceases. The solution is decanted off, and the residues are allowed to remain in the pot during three operations. After the third operation, the residues, which are rich in copper and in a less degree in nickel and cobalt, are emptied out, and they go to a common furnace together with ore or matte.

In 100 parts of matte there are 29 of sulphur, not including that combined with copper. Theoretically, therefore, we want a quantity of HCl equal to $29 \times \frac{36.5}{16} = 66$, corresponding to 200 of commercial acid. Theoretically, for one part matte we ought to use up 2 parts acid, but in practice it is found that $2\frac{1}{2}$ parts are used up. At the end of each operation the liquid is siphoned from the solution into a store barrel. There are two sets of apparatus, consisting each of 3 solution pots and 1 store barrel.

II. *Evaporation.*—The hydrochloric solution of iron, nickel, and cobalt is evaporated to dryness in a reverberatory furnace. The apparatus consists of a large cast-iron pan, lined with a brick lining. Cracks are stopped with a cement made of coal and pounded brick. At first the flame used to be passed below the boiler as well as above, but at present it is considered sufficient to pass it above. The fuel used is wood from old petroleum barrels.

III. *Calcination.*—The stuff evaporated to dryness is a pulverulent mixture of iron, nickel, and cobalt chlorides. It is shoveled in on the hearth of a reverberatory furnace to a depth of 6 centimeters and roasted for three or four hours, a constant stirring being kept as long as the roasting lasts. During the operation a part of the iron separates out either as a volatile chloride or an insoluble oxide.

IV. *Peroxidation and Precipitation of the Iron.*—The roasted stuff is carried into an oval vat 2 meters long, $1^m.50$ wide and $1^m.50$ high. Water and chloride of lime are added in quantity strictly sufficient to peroxidize the remainder of the iron; and then it is precipitated with pounded marble. During the peroxidation and precipitation of the iron a jet of steam is sent into the vat. After being allowed to settle, the liquor is decanted with a pump, the greater part of the peroxide of iron remaining in the vat. The decanted liquor is allowed to remain for twenty minutes in eight store barrels and is then drawn off. The first drawing is turbid and goes back to the first vat. The next drawings are a clear solution of NiCl and CoCl.

(TO BE CONTINUED.

EXCURSION OF PHILADELPHIA COAL DEALERS THROUGH THE MINING DISTRICTS.—At eight o'clock on the morning of July 5th, the retail coal dealers of Philadelphia, to the number of 250, will leave Broad and Callowhill streets on a special train for a two days' trip through the coal regions. They will go first to Mahanoy City, then to Mahanoy Plain, from thence to Mount Carmel, and thence to Shamokin, where they are to remain all night. Next morning they leave by special train over the Lehigh Valley road for Shenandoah, pass through the Hazleton region and halt at Mauch Chunk. From there they come direct to Philadelphia. The special trains have been tendered the excursionists by President Gowen, of the Reading road, and Judge Packer, of the Lehigh Valley line. The party will be in charge of Messrs. F. P. Kendrick, James Wentworth, W. Durell Shuster, and Simon Hamburger, well-known coal dealers.

MINING NEWS.

Special Correspondence of the Engineering and Mining Journal.

COLORADO.

LAKE COUNTY.

The Carbonate mine, situated half a mile from Leadville and the Harrison smelting works, is owned by Halleck and Cooper, and is superintended by J. E. Cole. The mineral pitches into the hill at an angle of 15 degrees below the horizontal. The vein is broken and uneven, as with other ledges of this locality. Its thickness varies from two to eleven feet, being largest and richest at the innermost and latest workings. There are altogether over 400 feet of levels, shafts, etc., mainly in the way of inclines. In some of the earlier openings the ore in sight has been stoped out as far as found. Most of the work is now carried on through a shaft reaching to a depth of 30 ft. and connecting with an incline extending 182 feet beyond, into the hill. This ground was first opened by levels and short shafts, following the break or change in direction of the ore-body, but one long incline for hoisting has been substituted. One level has been driven a short distance therefrom. Measurements made at the time of our visit show an average thickness of vein for the last 78 feet of incline driven of over 6 feet and 2 inches, but the vein has from 7 to 11 feet in the last 30 feet of the incline driven. The ore remained standing along the sides of the incline ready for stoping. The yield of the first 310 feet of levels driven was at the rate of $151 per foot of incline, and for the last 119 feet $218. The first-class ore has yielded from 375 to 600 ounces per ton in silver, and from 35 to 55 per cent of lead. The second and third classes go from 250 ounces down to 100, and give from 8 to 25 per cent of lead. There are some 200 tons of ore on the dump, carrying from 20 to 30 ounces in silver, which will not be handled at present.

The Carbonate was discovered June 25th, 1877, and the first ore was sold in August. Up to April 1st the receipts for the 363 tons of ore sold were $47,644, an average of $131 per ton, and the total expenses of mining and buildings was $7200, leaving a net profit of $40,444. The actual yield was over $210 per ton, or $71,466 altogether. The force employed averaged about 7 men.

The record of the Carbonate, for the two and one half months from April 1st to June 15th, was still more remarkable. The working force was 7 miners and 3 or 4 timber-men and wood-cutters. The receipts were $30,000 for 159 tons of ore—an average price of $188 per ton for ore which yielded about $260 per ton—total yield about $40,000. The cost of mining, improvements, etc., was only $2105.55, leaving a net profit of $27,894.45 for two and one half months' work. This handsome record was made almost entirely in driving the main incline. The total receipts of the mine so far have been $77,644 for 517 tons of ore. The total expense of mining, improvements, and buildings has been $9305.55, and the net profits $67,338.45. Total yield, $111,466, besides 200 tons of low-grade ore on the dump, containing some $8000 worth of silver and lead. At present a larger yield is being obtained than ever before, and this without stoping. The amount of ore in sight is very great. When opened in better shape, the mine will discount its past record.

Hurlbut & Bent recently sold the Terrible and Adelaide for $75,000. Several smaller sales are reported.

For several months the carbonate mines around Leadville have been shipping nearly or quite 75 tons of the higher grade ores. Two thirds of this amount has gone to St. Louis through A. Meyer, and the remainder to Omaha through Berdell & Witherill. The Harrison smelter treats 15 tons of ore daily, and ships about 5 tons of lead bullion. Patrick & Co.'s ore-sampling mill is ready to begin work. Before July 1st, Eddy & James's sampling mill of 70 tons daily capacity will be at work. The leading mines have not been made to turn out much ore lately, some of them retaining all of their ore for months, and others selling but a portion of the output. The Dana will begin to ship ore this week. No ore has been sold since March, although there are scores of tons on hand, some of it yielding from 500 to 1500 ounces. Many new discoveries were made in June. Some of these are paying well. COIN.

NEVADA.

THE COMSTOCK.

The *Gold Hill News* of the 19th inst. has the following in its mining summary:

"The Ophir development shows improvement as further opened out, and the same may be said of the Julia. Savage is stepping back out of the way of the fierce advance of the Sutro tunnel. That is to say, the intervening space between the face of the Savage east drift on the 1640 level, and the face of the Sutro tunnel header is so small that the heavy giant powder blasts in the face of the tunnel shake and rattle down the rock in the Savage drift so that the miners can not work with comfort, and have been withdrawn from working in its face. We hear it privately intimated that Sutro proposes blowing a hole through and completing connection with the Savage drift on the Fourth of July. The face of the tunnel header is in easy working vein matter, composed of ledge porphyry, quartz, and clay, allowing of a good rate of advancement. The tunnel having already penetrated the great Comstock belt, and the face of the header being less than 300 feet from the west wall of the lode, it is liable to run into and connect with the workings of the Savage mine very shortly."

Mr. Sutro expresses the opinion that the header of the tunnel is not distant more than 250 feet from the east drift on the 1640 level of the Savage mine.

Messrs. McCalmont Brothers & Co., of London, have granted an extension of the mortgage on the whole property of the Sutro Tunnel Company, amounting to $433,965.10, until January 1st, 1891, the interest being at the rate of 12 per cent per annum.

A recent number of the *Territorial Enterprise* says: "The 2000-level station in the Ophir is the point toward which all eyes are turned. As yet they have nothing that approaches to the magnificence of the ore-body found on the 1500 level of the California and Consolidated Virginia mines, but they have a very good and promising development. They have what appears to be the beginning of a bonanza of no mean dimensions, and the great depth at which this has been found is a circumstance which is calculated to give new courage to all who are interested in mining enterprises on the Comstock.

"The operations in the Alpha and Imperial mines are beginning to attract much attention. It has always been the opinion of mining men that in this part of the lode it would be necessary to go to a great depth in order to find a bonanza, but when found it would prove of immense size and value. In this category is placed the Bullion. Whether or not 2400 feet is deep enough to reach the bonanza in range of other mines will now be known at no very distant day."

UTAH.

We are indebted to the *Salt Lake Tribune* dated June 22d for the following items concerning the condition and operations of some of the principal Utah mines:

THE DRY CAÑON DISTRICT.

"There is not an idle man in this camp.

The Hidden Treasure, under the management of R. Hutchins, continues to make her regular shipment of thirty tons of ore a day, the low price of lead notwithstanding.

The Cedar and Sacramento, owned by the same company, are also making shipments of good ore.

The Pine Grove, owned by Sharp & Owney, have just made a shipment of $300 ore with more in sight.

The Buckhorn is working six men and shipping ore.

The Lily Rose, on lease by Butler & Company, is working a small force and taking out good ore.

The Rattler is being worked on lease and looks well.

The Silver Crow, owned by a Lancaster company, under the management of Busby, is about to start up with a large force of men.

The Kearsarge is working twelve men with good prospects.

The Mono, under lease to George Clark & Co., is now working fifteen men and shipping ore.

The Magnolia, owned by Granger, is working a small force, and the mine looks well.

The Utah Queen has just started up under lease to Toy & Taylor.

The Deseret, owned by Chamberlain, and superintended by Richard Welch, is being actively worked.

The Herschel, owned and worked by Watson, Spangler & Kelly, is making daily shipments of high-grade ore.

The Queen of the Hills is under lease to John Brooks, who is working eight men, and doing well.

The Eureka has started up with a small force under lease to Mills & Brune. They have a good body of ore, and will soon be shipping.

THE BINGHAM—HIGHLAND DISTRICT.

Though the lead market still presents an unfavorable aspect, it does not appear to have a depressing influence upon the shipments of ore from this section. The owners of the principal mines evince an unwillingness to operate by hiring, and find it more advantageous, pecuniarily, to sub-let. The majority of the mines now being worked are on lease, and considerable ore is being extracted.

The Neptune is sending to market about 100 tons of very fair ore, which will net the lessees a handsome profit.

The ore of the Carr Fork, Muddy, and Log Fork, on account of its higher grade, is attracting considerable attention, and mines that can be leased are eagerly sought after.

The Last Chance Company is hard at work getting ready to start up. Its large boarding-house is almost completed, and a few days will see the mine in full operation.

The Steamboat still furnishes her quota of auriferous ore. Since the last clean-up, considerable ore has accumulated, and, from the present indications, another gold brick will be on exhibition.

The Agnes has been leased to Williams & Miller. Assays recently made from this mine show as high as 800 ounces.

The Peabody is turning out some fine ore, and a portion of the mine has been leased.

Rawdin, Westwood & Co., after having given the ten-forty ore a thorough test of its leaching capabilities, are preparing to put up works on an extensive scale, and will soon be in full operation.

The Live Pine is being pushed ahead on day's pay.

The Fanny Bemiss has been leased to A. Gauchet.

The Galena Extension is being worked by the Wells Brothers, who are taking out some fine galena ore.

Tadder's leaching process is in full blast, and considerable ore is being put through.

The first extension of the Telegraph is being worked under the superintendency of Mr. N. Treweek. A tunnel is being run to crosscut the vein. It is now in about seventy feet, and it will take about two months to tap it. About 500 feet of workings have been made on this mine, and considerable ore has been found in a carbonate form. A small force is being worked for the present, and, as soon as the mine is placed in good shape, more extensive operations will be made.

The Yosemite is still idle.

A few hands are prospecting the Revere.

Col. Dodge has a prospect in Black Jack Gulch which is showing up well. 400 feet of a tunnel has been run.

The lead mine leased to Dereha & Co. is working a full force. About fifty tons of ore is finding its way to market weekly.

The Gilbert is leased, and shipping ore.

The Mayflower has about twenty-five hands employed, and ships ore regularly.

The Winebago has recently made a rich strike showing assays of 1000-ounce and $800 gold.

The Miner's Dream is working a few hands on ore. It is now leased.

The Batis & Egan mill is putting through ore from the Peabody."

ONTARIO SILVER MINING CO.

NEW YORK, June 1, 1878.

The Superintendent of this company, in his report to the President, under date of May 19th, 1878, says:

"Since my annual report, ending February 1st, 1878, the following developments have been made, viz.: The 200-foot level has been driven east 30 feet, developing a strong vein. The east drift on the 300-foot level has been driven 41 feet, with good indications. The 500-foot level is now driven 600 feet east of shaft-station in good ore the entire distance. The up-raise in the west level is now up 76 feet, passing through a large body of high-grade ore. The mine is as promising for our regular yield of ore and bullion as it has been at any time during the past year. The new shaft is situated north of the old shaft 300 feet distant, and is now sunk to a depth of 100 feet. It is well timbered with 10×12 red pine sets. The pump compartment is 5×7 feet in the clear, and there are also two hoisting compartments of 4½ feet by 5 feet each in the clear. The compartments are divided by timbers 8×12. The new shaft will be sunk to a depth of 600 feet before we crosscut to the lode, and will intersect the lode on its pitch at a depth of 1500 feet vertically from the surface.

"We are now moving the old engine and hoisting gear to the new shaft for sinking purposes and getting ready for our new hoisting and pumping works.

"The mill is in good condition to do its usual work."

Statement.

February 1st, 1878, by balance cash on hand				$266,066.08
Receipts.				
			Assay value.	Sold for.	
February, 1878	68 bars of Bullion		$143,359.92	$129,334.92	
March, 1878	82	"	"	173,997.85	157,806.29	
April, 1878	90	"	"	168,661.28	152,151.97	
*May, 1878	64	"	"	129,658.60	116,427.38	
				$615,677.65		$555,719.66
						$821,785.74

Disbursements.

	Expenses.				Dividends.	
February, 1878	$33,877.54	Nos. 19 and 20			$100,000	
March, 1878	32,472.83	" 21	" 22		100,000	
April, 1878	32,527.80	" 23	" 24	[$100,000 cy.]	99,500	
May, 1878	33,976.59	" 25	" 26	" "	99,500	
" Reclamation on bars No. 1220 to No. 1662	2,869.14				.....	
	$135,723.90				$399,000	$534,723.90
Balance on hand June 1st, 1878, gold						$287,061.84

The Superintendent of this company, in his report for the week ending June 14th, says that work was recommenced on the new shaft on the 11th inst., since which time it has been sunk 14 feet. Total depth, 120 feet.

* Mill shut down to clean flues, May 21st.

SALT LAKE CITY, June 26, 1878.—Placer gold diggings have been found on the Upper Sweetwater, near South Pass. It is claimed that miners are making $8 a day there.

THE FRISCO DISTRICT.

"Ground has been broken for the new hoisting works of the Great Horn silver mine. A new working shaft is already started and has attained a depth of twenty feet. It will be sunk to the ore-body as fast as circumstances will permit. Campbell, Cullen & Co., the owners of this immense and valuable silver mine, are now taking steps to more rapidly bring this huge body of silver ore to the surface and convert it into fine bullion. Both smelters are running and making two car-loads of bullion per day. The company will bore an artesian well here for water.

The amount of bullion run out last month by the Bonanza Company's smelter and the Frisco smelter amounted to fifty car-loads, or 500 tons of base bullion, averaging 151 ounces per ton, making a total of $75,500. Adding thereto $4000 run out in silver bars by the Frisco Reduction Works (which was made on a short run), it makes the round sum of $79,500.

Beaver County, so far as mines and precious metals are concerned, now takes the lead.

Notwithstanding the low price of lead, the smelters continue to run, and are doing finely.

The Cave mine is developed to such an extent that it bids fair to be styled a second bonanza.

The Wasco mine, in Star District, is looking splendid and shows a huge body of the finest kind of smelting ore, large quantities of which are being shipped to the different smelters in this county."

NEW PATENTS.

The following is a list of the new inventions relating to Iron, Coal, Mining Machinery, Chemical Apparatus and the treating of Precious Metals, etc., from the *Official Gazette of the United States Patent Office*, for week ending April 30th:

No. of Patent.	*Title of Invention.*	*Name of Inventor.*	*Residence.*
202,933	Valves for Steam-Engines	Ezra Cope	Hamilton, O.
202,940	Ore Crushers	Philetus W. Gates (a).	Chicago, Ill.
202,941	Ore Crushers	Philetus W. Gates (b).	Chicago, Ill.
202,969	Manufacturing of Articles Produced by Electro-Deposition	Jas. W. Tufts	Medford, Mass.
203,003	Apparatus for Washing and Condensing Coal-Gas	R. A. Cross	Boston, Mass
203,006	Marine Engines	Albert Demo	Camden, N.J.
203,009	Automatic Cut-offs for Plane-Valve Engines	Ephraim R. Dingley	New York, N. Y.
203,013	Speaking Telegraphs	Thos. A. Edison (c).	Menlo Park, N.J.
203,014	Speaking Telegraphs	Thos. A. Edison (c).	Menlo Park, N.J.
203,015	Speaking Telegraphs	Thos. A. Edison (c).	Menlo Park, N.J.
203,016	Speaking Telephones	Thos. A. Edison (c).	Menlo Park, N.J.
203,017	Telephone Call-Signals	Thos. A. Edison (c).	Menlo Park, N.J.
203,018	Telephones, or Speaking-Telegraphs	Thos. A. Edison (c).	Menlo Park, N.J.
203,019	Circuits for Acoustic or Telephonic Telegraphs	Thos. A. Edison (c).	Menlo Park, N.J.
203,034	Torpedoes for Oil Wells	Wilson Haus	Church P.O., Pa.
203,041	Tuyeres	Abraham K. Herr	Lampeter, Pa.
203,044	Oil Well Packings	Lawrence W. Hoadley	Peachville, Pa.
203,075	Amalgamators	Wm. Purvine	Butte, Montana.
203,104	Apparatus for Separating Sand from Water	Erastus S. Bennett	Denver, Colo.
203,197	Sectional Steam Generators	John J. Roper	Philadelphia, Pa.
203,199	Hydrocarbon Compounds for Fuel	Silas C. Salisbury	New York, N. Y.
203,206	Pumping Apparatus for Oil Wells	Chas Snyder	Rousville, Pa.
203,219	Stone Sawing Machines	Wm. Tuggey	W. Rutland, Vt.
203,235	Oil Well Valves	Lemuel W. Yound	Elk City, Pa.
	RE-ISSUE.		
8,203	Feeding Air to Furnaces	James Jenks (d)	Detroit, Mich.

(a) Assignor to himself, Abigail E. Gates, R. D. Gates, and P. W. Gates, Jr., same place.
(b) Assignor to himself, Abigail E. Gates, R. D. Gates, and P. W. Gates, Jr., same place.
(c) Assignor to Western Union Telegraph Co., New York.
(d) Assignor ½ interest to George A. Jenks.

NOTES.

ITALIAN RAILWAYS.—The Italian government contemplates the construction of 60 new lines of railway. The aggregate extent of these lines will be nearly 2500 miles, and their cost is estimated at £33,200,000. It is proposed to spread the execution of the works over a term of 15 years.

DISCOVERY OF COAL MINES IN WASHINGTON TERRITORY.—NEW TACOMA, June 12.—Two new mines of superior-looking coal have been discovered at Tacoma colliery, one ten feet seven inches, the other eighteen to twenty feet. The discovery created some excitement.

GAS AT PARIS.—The revenue of the Parisian Company for lighting and heating by gas is continually extending. The amount collected by the company in the first four months of this year were £777,066, showing an increase of £53,466, or 7·39 per cent, as compared with the corresponding period of 1877.—*Engineering.*

BRITISH EXPORTS.—The exports of railway and all other classes of iron and steel show a large falling off for the month of May, as compared with the same month last year. The total exports of all kinds of iron and steel for the first five months of this year were 916,705 tons; for the like period of 1877, 895,128 tons; and of 1876, 837,399 tons.

THE farmers in all parts of Ohio are receiving almost daily notices signed "Workingmen's Bread or Blood Committee," and warning them against buying labor-saving machinery, and especially self-binding reapers. Threats are made that every such reaper will be destroyed, and the stacks of grain burned, if an attempt is made to use them. No cases of violence, however, have yet been reported.

THE TELEPHONE IN TELEGRAPHY.—Mr. Edison has made a contract with the Western Union Telegraph Company by which all his electrical and magnetic inventions become the property of the company. These include his telephone, which the company considers the most useful telephone invented. The company hopes to establish telephone communication with at least 4000 towns, too small to support the expense of a telegraph operator.

Partial confirmation of the above statement may be found by reference to the official list of patents published in another part of this issue, where seven of Mr. Edison's patented improvements may be found assigned to the Western Union Telegraph Company.

THE COAL MINERS' STRIKE IN ILLINOIS.—SPRINGFIELD, Ill., June 26.—The Governor was telegraphed yesterday by the Mayors of Peru and Lasalle that trouble with the striking miners was expected to take place to-morrow, and asking for troops. The Governor referred them to the Sheriff and telegraphed the latter he could obtain troops, if necessary, for a posse. Colonel Fithian, of Joliet, was telegraphed to and ordered to report to the Sheriff with three companies of the Twelfth Battalion. He is now in communication with the Sheriff, and troops are under arms for any emergency that may arise, but all is quiet as yet, and it is now believed the prompt action of the Governor will prevent the expected disturbance.

A MAMMOTH CAVE IN WYOMING.—The New York *Times* of June 27th says: "A new mammoth cave has been discovered, it is asserted, in Wyoming Territory that bids fair to equal, if not to eclipse, the famous cave of Kentucky. A dozen herders placed a windlass near the mouth of the cavern, on Table Mountain, some weeks since, and lowered one of their number, carrying a lantern, to the depth of nearly 100 feet. A passage 200 feet long led to subterranean chambers and vaults of vast size, too many and too diversified to form any exact idea of. The roof was from 60 to 70 feet high, and studded with stalactites varying from a few inches to 20 feet in length. The floor was covered with cones and stalagmites, the stalagmites and stalactites joined in many places, making quaint and picturesque columns. The formations of rock are represented as singularly curious, and varying in quality, color, and shape to a degree that has not been seen elsewhere. Some partial explorations indicate that the cave must be of immense size, and full of the most interesting geological phenomena. It is said that a party of scientific men will soon visit it, and give an account of their explorations. It is high time that we had a new and wonderful cave, for the Mammoth Cave has lost its novelty, and needs a rival in the far West."

BURTON'S SECOND EXPEDITION TO THE LAND OF MIDIAN.—The English technical journals are just now full of accounts of Captain Burton's second exploration of this re-discovered El Dorado. The expedition was fitted out under the auspices of the Egyptian Government, and occupied some four months in the work of examination, having traveled and voyaged over 2500 miles. The result appears to have been highly satisfactory, as the expedition has just returned to Cairo, loaded with specimens of valuable minerals and with much special information. The collections made comprise, as reported in *Nature*, 25 tons of rock specimens illustrating the geology of the country; six cases of ores; five cases of coins, inscriptions, worked stones, fragments of melted metals, glass, and pottery; more than 200 sketches in oil and water colors; photographs of the chief ruins, including the catacombs, temples, etc.; and finally, maps and plans of the whole country, including 32 ruined cities, besides sketches of numerous locations where perambulating bands of miners, ancient and modern, have carried on mining operations. The specimens include argentiferous and cupriferous ores from Northern Midian, and auriferous ores from the south. There are collections from 3 turquois mines. There exist, likewise, two great sulphur mines—one in the north, and the other in the south. Rock-salt occurs in abundance in two large salt lakes. The whole of the secondary formation of the region abounds in gypsum, and parts of it contain quantities of alabaster, of which traces of ancient quarries still exist, which appear to have supplied a number of the ruined cities.

The ores will be carefully examined at Cairo, and selections from the collections will, after being shown at Cairo, be sent to the Paris Exhibition.

COAL MINES IN CHINA.—Alongside of the distressing accounts of the Chinese famine, news reaches us to the effect that China bids fair to be one of the first coal countries of the world. Already the coal production of the empire is reckoned at 3,000,000 tons annually, all the eighteen provinces containing coal; and now a scheme is announced for working coal mines 120 miles west of Chefoo, including a tramway to the sea with Chefoo as the principal depot. A Taontai, named Chang, is forming a merchants' company to begin operations with all the modern scientific appliances; and along with the cheap and effective labor to be had in the empire, there can be but little doubt that the coal-fields of China will soon rise into importance. The most extensive of these fields appears to be Shan-see, to which, high authorities assure us, no other coal region can be compared, in the union of the most fortunate conditions as regards position, quality, and quantity, all the more that, along with the coal, brown iron ore is largely found. "With a yearly output of 300,000,000 tons," writes one of these authorities, "this extensive bed of anthracite alone could cover the whole present demand of the world for 2400 years." Meanwhile, the whole of the coal fields are so much in their infancy, that the output at present is only equal to about one fifteenth of the coal production of Germany or the United States. The anthracite beds of Shan-see represent only 1,000,000 tons, with bituminous coal to the extent of 700,000, while the output from the provinces of Shan-toong and Chee-lee is no more than 200,000 and 150,000 tons respectively. The Merchants' Company, therefore, has some work before it, till it reaches the supply predicted of Shan-see alone. That the mineral wealth of so vast an empire as China is very large admits of no doubt, but it will be a curious illustration of extremes meeting if she becomes as great an emporium for what is beneath her soil as she has long been for what is above it. In this way the world may yet be indebted to China, not only for the tea "that cheers and not inebriates," but even for the fire that makes the kettle boil.—*Liverpool Mercury.*

THE UTILIZATION OF THE NIAGARA FALLS POWER.—The *Commercial Advertiser* of Buffalo, N. Y., says: "A company has been formed, of which Senator Pierce is President, and practical operations begun, considerable capital having been paid in. The principal part of the machinery will be located near the water's edge, below the Falls, in the vicinity of that delightful spot called the Bridal-vail. The remainder will be on the bank immediately above. The great air receptacles, three of which will be 70 feet long by 6 feet in diameter, will be located below the bank, near the water, while the receiving reservoirs will be on the bank. The cylinders will be constructed of boiler-iron in the most substantial manner. The perpendicular fall from the feeding basin above, to the air receptacles below, is 214 feet. The engineer's figures show that 200,000 pounds of iron will be required, and it is estimated that power enough will be generated to raise about 350,000 gallons of water 150 feet every minute. These results have been obtained by careful scientific tests, so that there is little doubt that they are nearly correct. Gentlemen prominently connected with this enterprise own Day's Canal, which was constructed several years ago by Mr. Day for water-power purposes, at an expense of nearly $1,000,000. This canal will play an important part in connection with the new project. It is 23 feet wide by 11 feet deep, and leads from a point just above the rapids, a mile across, to the bank below. At its lower terminus is a large basin, 70 feet wide and 800 feet long and 11 feet in depth. From the basin a flume 300 feet long is being dug to the edge of the precipice. At the mouth of the flume will be a massive iron gate with an eight-foot opening. The water from the flume will pass into the reservoir, which will be connected with the air receptacle below by means of large pipes, siphon-shaped. Attached to the cylinders will be a requisite number of large automatic valves, to let the water run out of the cylinders after the compressed air has been allowed to escape. The practical working of the machinery will be briefly as follows: After the water in the reservoir on the top of the bank is high enough to reach the bend of the siphon, it will escape down the pipe to the air cylinders below. The pressure thus obtained very soon closes the automatic valves. There being no escape for the water which continues to pour into the cylinder (each has its own feeder), the air which it contains is compressed by the volume of water from above until it has as much expansive power, when released, as steam. The capacity of the reservoir and of the cylinders is so arranged that the reservoir will be exhausted by the time the desired compression has been obtained below. While the reservoir is again filling with water, that in the cylinder is escaping, so that when the bend in the siphon, is reached, the contents of the cylinder is exhausted, and it is ready for another charge. Thus the operation is repeated at regular intervals in each cylinder, and there being several of them, a continuous charge of highly-compressed air is secured. There seems to be no doubt that the air thus compressed can be conveyed by pipes a reasonable distance, and made to do valuable service at nominal expense. In France it is conveyed 50 miles. The loss by friction in transmitting it from the Falls to Buffalo is placed at fifty horse-power on every thousand, which is scarcely worthy of mention. The projectors of this great enterprise are confident that they will be able to do the pumping for the City Water-works at figures which will make the present cost of the department appear enormous. They are also confident that they can make compressed air take the place of steam in manufacturing."

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative statement for the week ending June 22, and years from January 1:

TONS OF 2240 LBS.	1878.		1877.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co..	22,188	886,772	50,506	1,048,960
D. L. & W. RR. Co.	45,880	844,101	49,742	1,051,458
Penn. Coal Co.....	14,586	322,267	23,376	499,766
L. V. RR. Co.....	23,740	362,378	20,482	466,043
P. & N. Y. RR. Co..	607	12,132	1,741	25,250
C. RR. of N. J.....	15,477	401,315	25,938	719,635
Penn. Canal Co....	14,215	100,786	16,782	151,265
	136,693	2,929,751	188,567	3,962,377
Lehigh Region.				
L. V. RR. Co.....	47,476	1,013,689	68,587	1,389,404
C. RR. of N. J.....	36,688	530,734	34,307	697,748
D. H. & W. B. RR..	743	12,005	.....	6,311
	84,907	1,556,428	102,894	2,093,463
Schuylkill Region.				
P. & R. RR. Co....	165,497	1,897,259	128,733	2,737,386
Shamokin & Lykens Val....	13,428	301,825	19,135	290,561
	178,925	2,199,084	147,868	3,027,947
Sullivan Region.				
Sul. & Erie RR. Co.	733	14,601	35	5,069
Total	401,258	6,699,864	439,364	9,088,856
Increase.....	.....	.....	.....	.....
Decrease	38,106	2,388,992	.....	.....

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent of the whole production.

Receipts and shipments of coal at Chicago Ill., for the week ending June 22, and year from January 1.

	Week. Tons.	Year Tons.
Receipts.....	43,370	673,512
Shipments.....	5,333	88,166

Coals Cleared on the Canals of the State of New York for the week ending June 22, and years from the opening of navigation:

Tons of 2000 lbs.	1878.		1877.	
	Week.	Year.	Week.	Year.
Anthracite	31,107	151,837	47,916	290,272
Bituminous.....	4,868	34,850	11,858	74,979
Total amount cleared	35,975	186,687	59,774	365,271

Belvidere Delaware Railroad Report for week ending June 22:

	Week.	Year. 1878.	Year. 1877.
Coal for shipment at Coal Port (Trenton).....	498	1,320	10,119
Coal for shipment at South Amboy	11,318	226,328	305,471
Coal for distribution.....	3,102	76,177	83,398
Coal for Company's use.....	1,685	37,437	36,563

Receipts of Coal at Boston, for the week ending June 21 and years from January 1:

TONS OF 2240 LBS.	1878.		1877.	
	Week.	Year.	Week.	Year.
From Alexandria and Georgetown.....	6,383	16,374	6,362	22,850
Philadelphia.....	23,259	237,204	20,478	249,667
Baltimore.....	5,799	70,788	4,459	56,522
Other places.....	8,200	112,188	14,388	122,465
Great Britain	.....	14,225	52	1,249
Nova Scotia..... ..	457	4,971	622	5,983
Total..... ..	44,098	455,750	46,361	458,736

The Exports of Coal from Baltimore for the week ending June 21 were 557 tons, and since January 1, 20,462 tons, as against 19,683 tons for the corresponding time in 1877.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 44,615 tons as compared with the corresponding period in 1877.

The Production of Bituminous Coal for the week ending June 22, was as follows:

Tons of 2000 lbs., unless otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2,240 lb.....	35,252	611,588
Barclay Region, Pa.		
Barclay R. R., tons of 2,240 lbs.....	6,863	142,807
Broad Top Region, Pa.		
Huntingdon and Broad Top R. R.....	3,058	65,620
*East Broad Top.....	989	30,784
Clearfield Region, Pa.		
*Snow Shoe.....	12	12,824
*Tyrone and Clearfield.....	26,045	554,869
Allegheny Region, Pa.		
*Pennsylvania R. R	4,266	94,795
Pittsburgh Region, Pa.		
*West Penn R. R.....	2,141	93,436
*Southwest Penn. R. R..... .	39	12,558
*Penn & Westmoreland gas coal, Pa. R. R.....	14,250	337,332
*Pennsylvania R. R.....	11,230	206,274

*For the week ending June 21.

The Production of Coke for the week ending June 21:

Tons of 2000 lbs.	Week.	Year.
West Penn R. R....	1,697	38,740
Southwest Penn. R. R.....	17,061	367,613
Penn. & Westmoreland Region, Pa. R. R.	1,912	32,393
Pittsburg, Penn. R. R.....	1,622	43,611
Total...	22,292	482,357

COAL TRADE REVIEW.

NEW YORK, Friday Evening, June 28, 1878.

Anthracite.

The Coal Barons held a harmonious meeting in this city on Monday, when the following allotment of tonnage was made for the month of July :

Philadelphia & Reading.....	429,375
Lehigh Valley.....	296,250
Central, of New Jersey	193,575
Delaware, Lackawanna, and Western.....	191,250
Delaware and Hudson.....	187,200
Pennsylvania Railroad.....	114,375
Pennsylvania Coal Company.....	87,975
Total, tons.....	1,500,000

These figures do not indicate the activity that it has been customary of late to ascribe to the trade. It was supposed by many that July would inaugurate a better demand, but by comparison with the June allotment it must be inferred that the prospects are not so good, or that trade has been forced since January 1st. This, however, is only in accordance with views expressed by us in previous articles. We continue to question the wisdom of the large output for this month, and believe that, if the suggestion of one of the Presidents, viz., that the output for July be made but 1,000,000 tons, had been adopted, during the months of August, September, and October, when an active business is expected by all, it would be much easier to secure full prices. The manner in which trade is being forced now must react to the disadvantage of the average year's business.

On Wednesday, the Delaware, Lackawanna, and Western R. R. Co. sold at public auction 50,000 tons of coal according to the announcement made last week. The following average prices were received, comparison being made with the prices secured at the previous sale :

Tons.	Average prices June 26th.	Average prices May 29th.
6,000 Steamer	$3.47½	$3.42½
12,000 Broken.....	3.48½	3.45
10,000 Egg.....	3.58½	3.56
15,000 Stove	3.89	3.75
7,000 Chestnut.....	3.25	3.25
50,000	$3.59	$3.59

Owing to there having been a smaller amount of stove coal offered at the last sale, the average was no larger than the previous one. It will be observed, however, that the prices of the sale of Wednesday show a slight improvement. Last year the prices of Scranton coal, as shown at the auction sales, indicated that this coal was even superior to many other qualities. The above prices, even if fairly representing the views of buyers, are 12c. per ton lower than other parties claim they have had to refuse orders at. We are informed, however, by some who have an interest in sustaining prices, that the figures shown at the auction sale are higher than are being secured by some even better coals.

Prices have been advanced on Lehigh stove and chestnut coals 20c. per ton, and upon the same sizes of all other coals 10c. per ton, the remaining sizes being unchanged. These two sizes are in less active demand than the others and are less likely to be sustained, but the companies undoubtedly feel themselves safe in announcing that it is their intention, if possible, to secure an advance from those who consume coal for domestic purposes, knowing that there can be no competitor in the Eastern markets. The policy, however, of forcing this branch of consumers to largely meet the companies' necessities will greatly curtail the markets and bring about the introduction of economies which, in the end, may be a disadvantage, rather than an advantage, to the companies.

The prices of manufacturing sizes have been left unchanged. The proper action upon these, however, would have been to make a reduction. Already are they so high that, if maintained, they must bring about a very active competition from Cumberland and Clearfield coals. It is but the ignorance of consumers as to the relative merits of anthracite and bituminous coals, and the belief that the combination must break, and, as a consequence, that anthracite coal must resume the rates of last year, that has prevented the large introduction of bituminous coals. Already some large consumers who were using anthracite coal last year have begun the use of bituminous, and as the combination has existed in harmony longer than was expected by many, there is now a growing inclination to believe that it will last through this year. The result is that each day brings new inquiries for bituminous. Numerous Government and other practical tests, show bituminous coals to have a considerable advantage over anthracite as a steam generator. Cumberland coal can be delivered in Boston at $4.20@$4.25 ; anthracite broken is quoted here at $3.60—adding say 80c. per ton freight makes the cost laid down there $4.40, or 15c. to 20c. per ton higher than bituminous. Broken coal is quoted in Philadelphia at $3.30, and freights $1.25@$1.40, making the cost laid down in Boston, $4.55@$4.70. It will be observed, therefore, that the bituminous coals should have a decided advantage, and it only remains for them to secure it. The anthracite producers have the advantage of a strong foothold and an influential representation. It will be necessary for the bituminous interests to have the markets thoroughly canvassed by men having a full knowledge of the merits of the coal and who are well informed on combustion—men who can advise as to the changes necessary to use the coal, the cost of such alterations, etc., etc.

Considerable attention has been given by the press during the past week to a letter written by Colonel Forney to the Philadelphia *Press*, and a consul's report of the introduction of anthracite coal into Italy. The business that has been done is not worthy of note so far as quantity goes, but it is a great encouragement to have our coals tried in new markets, and it is a still greater satisfaction to learn, as Colonel Forney tells us, that in competition with English coke upon its present exceedingly low basis, there is a margin of profit for American coal of about 20 francs. The efforts of Mr. E. A. Quintard to introduce American anthracite coal in foreign markets have been largely sneered at, but they deserve the greatest encouragement, and will probably, in time, meet with deserved success. A profitable foreign market for so bulky an article as coal means a much larger commercial intercourse with the whole world, and will be a benefit to all classes of producers. Our present relations are mostly with large manufacturing centers, taking from us but little grain and produce. With a liberal foreign demand for coal we would begin to collect the raw materials that England now collects by her coal fleet, and we would become a much greater manufacturing nation.

The production of anthracite coal last week was 401,258 tons, as against 489,298 tons the previous week, and 439,364 tons the corresponding week of 1877. The total production from January 1st to June 22d was 6,699,864 tons, as compared with 9,088,856 tons for the like period of last year, showing a falling off this year of 2,388,992.

Bituminous.

The large contracts having been nearly, if not entirely consummated, the business progresses without attracting any particular attention. The shipments of both Cumberland and Clearfield coals show a falling off last week, as compared with the corresponding week of last year.

New York.

Wholesale Prices of Anthracite Coal for July Delivery f. o. b. at Tide Water Shipping Ports, per ton of 2240 lbs.

	Lump.		Steamer.		Grate.		Egg.		Stove.		Chestnut.	
WYOMING COAL.	$		$		$		$		$		$	
Lackawana, at Weehawken	3	60	3	60	3	60	3	75	4	20	3	60
*Pittston, at Newburg.....	3	45	3	45	3	45	3	60	4	05	3	50
L. Val. Coal Co., at Amboy.	.....		3	75	3	50	3	60	4	10	3	50
Kingston at Hoboken.....	3	50	3	50	3	60	3	75	4	20	3	50
Old Co.'s at Port Johnson..	4	40	.....		4	05	4	05	4	20	3	60
Lehigh Coal Exchange.....	4	10	.....		3	90	3	90	4	10	3	50
Wilkes-Barre at Pt. Johnson	3	60	3	60	3	60	3	75	4	20	3	60
Plymouth Red Ash at Port Johnson.....	.....		.....		3	60	3	75	4	30	3	70
Swoyers at Eliz. Pt. or S.A...	3	75	3	75	3	60	3	75	4	20	3	60
LEHIGH COAL.												
L. V. Coal Co., at P. Amboy.	4	10	.....		3	90	3	90	4	10	3	50
Cross Creek, at Port John.	4	00	3	90	3	90	3	90	4	20	3	60
Buck Mount. Vein at Elizabeth Port o S. A.....	4	25	4	00	3	90	4	10	4	25	3	60
SCHUYLKILL COAL												
At Pt. Richmond, Phila.												
Hard White Ash.	3	30	3	30	3	30	3	45	3	85	3	35
Free-burning W. Ash. ...,	.....		.....		3	25	3	40	3	85	3	25
Schuylkill Red Ash.....	.....		.....		.....		3	70	3	85	3	25
Lorberry.....	.....		.....		3	70	3	85	3	85	3	35
Lykens Valley Vein.....	.....		.....		3	70	3	95	3	95	3	55
†*Alongside in N.Y. Harbor.*												
Hard White Ash	4	10	4	10	4	10	4	10	4	40	3	80
Free-burning W. Ash.....	.....		.....		3	80	3	95	4	40	3	80
Schuylkill Red Ash.....	.....		.....		.....		4	35	4	50	3	90
Lorberry.....	.....		.....		.....		4	60	4	60	4	25
Lykens Valley Vein.....	.....		.....		4	60	4	70	4	70	4	35

*Fifty cents per ton additional for delivery in New York.

†On coal delivered f. o. b. at the Philadelphia and Reading Coal and Iron Co.'s Wharf at Williamsburgh, the current rate of harbor freight will be allowed from the prices here given.

Wholesale Prices of Bituminous Coal.

DOMESTIC GAS COALS.

Per ton of 2240 lb.	At the Shipping Ports.	Along side in New York.
Westmoreland and Penn	$4 25	.....
At Greenwich, Philadelphia	.....	$5 50
At S. Amboy	5 00	5 50
Kanawha at Richmond	4 10	5 40
Red Bank Cannel, Pa., at Philadelphia	8 00	8 50
Youghiogheny, Waverly Co., at Balt	4 00	5 65
Despard, West Va	4 50	6 00
Murphy Run, West Va., at Baltimore	3 75	5 85
Fairmount, West Va., " "	3 75	5 70
Newburg Orrel, Md. " "	3 75	6 00
Cannelton Cannel, West Va	.....	10 00
" Splint " at Richmond	6 00	7 00
" Gas Coal at Richmond	4 00	5 65
Peytona Cannel, W. Va., at Richmond	.....	10 00

MANUFACTURING AND STEAM COALS.

Cumberland at Georgetown and Alexandria	2 75@2 90	4 35@4 50
Cumberland, at Baltimore	2 90@3 00	4 35@4 50
Cl'rfi'd "Eureka" and "Franklin."		
At mines	0 75	.....
At Baltimore	3 25	4 50
At Philadelphia	3 25	4 50

FOREIGN GAS COALS.

	Sterling.	Am. cur'ncy
Newcastle, at Newcastle-on Tyne	7s.6d.	$2 50@ $3 50
Liv. House Orrel, at Liv.	25s.	13 00
Ince Hall Cannel "	35s.6d.	18 00
" Gas Cannel "	25s.6d.	10 00@ 10 50
Scotch Gas Cannel, at Glasgow, nominal	25s.	7 50
	Gold.	
Bl'k House, at Cow Bay, N.S.	$1 75	$4 50
Caledonia, at Pt. Caledonia	1 50	4 25
Glace Bay at Glace Bay	1 50	4 00
Lingan, at Lingan Bay	1 50	.....
Intern'l Mines, at Sydney	1 75	4 50
Pictou, Vale Mines, at Pictou	2 00	4 70

Retail Prices.

Per ton of 2000 lbs.

Anthracite.

	G. & Egg.	Stove	Chest
Pittston coal delivered	$5 00	$5 00	$5 00
Lack. coal, delivered below 59th St.	4 50	4 75	4 50

Bituminous.

Liv. House Orrel	$18 00	American Orrel	$11 00
Liv. House Cannel	18 00	Red Bank Cannel	7 00
Am. "	11 00	Cumberland	9 00
Ca'n'lt'n Bl'k, or splint	10 00		

Baltimore. June 27, 1878.

[Specially reported.]

Wholesale Prices per ton of 2240 lb. In cars at Depot N. C. R. R.

HARD WHITE ASH, FREE-BURNING WHITE ASH, SHAMOKIN, ETC.

Lump and Steamboat	$3.95	Stove	$4.25
Broken	3.95	Chestnut	3.70
Egg	4.05		

LYKENS VALLEY RED ASH.

Broken	$4.15	Stove	$4.45
Egg	4.25	Chestnut	3.90

From wharf or yard to the trade, 50c. per ton additional. Afloat by cargo per canal barge, 15c. per ton less than in cars.

Boston. June 26, 1878.

We quote Boston wholesale prices as follows:

Anthracite, broken	$4.45	Caledonia	$4.00
" egg	4.50	Newcastle	4.00
" stove	4.80	Cannel, English	18.00
Franklin	5.75	" Library	15.00
Cumberland	4.50	" Buckeye	11.00
Clearfield	4 50	Penn	6.25
Westmoreland	6.25	Youghiogheny	6.25

—*Commercial Bulletin*

Cleveland, O. June 25, 1878.

[Specially reported by F. A. BATES, Esq.]

Per ton of 2000 lbs. f.o.b. vessels.

WHOLESALE.

Brier Hill (Church Hill)	$3.25
" " No. 2 Grades	3 00@3.15
Monday Creek	2.60
Straitsville Lower Vein	2.60
Hocking Valley	2.60
Massillon (No. 2 grades 15 cents less)	2.60
Tuscarawas Valley	2.25
Columbiana	2.25
Nut coal, various grades	1.70@2.00
Screenings " "	1.25@1.50
Youghiogheny gas coals	3 60

RETAIL TRADE.

	1 ton.	10 tons.
Brier Hill lump	$4 00	3 75
Massillon and Mineral Ridge lump	3 75	3 50
" " " nut	3 50	3 25
Straitsville Lower Vein and Hocking lump	3 60	3 35
" " " nut	3 40	3 15
Rich Hill lump	3 50	3 35
" " nut	3 25	3 00
Columbiana, lump	3 00	2 75
" nut	2 50	2 35
Lacka'a., Wilkes-Barre and Pittston egg and grate	5 50	5 25
Lackawanna, Wilkes-Barre and Pittston stove	5 85	5 60
" " " chestnut	5 25	5 00

Lehigh $1 per ton higher.

Hamilton, Ont. June 25, 1878.

[Specially reported by H. BARNARD.]

Retail prices delivered per ton of 2000 lbs.

Scr. or Wilkes-B. Grate	$4.75	Lehigh Lump	$6.00
" " Egg	4.75	Brier Hill	5.00
" " Stove	5.25	Massillon	4.50
" " Nut	4.75	Smithing	5.50

Indianapolis, Ind. June 27, 1878.

[Specially reported by Messrs. COBB & BRANHAM.]

WHOLESALE BITUMINOUS.

On board cars, per ton of 2000 lbs.

White River	None in market	Hocking Valley	4.20
Brazil Block	$2.10	Raymond City	3.40
Highland Grate	1.85	Youghiogheny	3.70
Indiana Cannel	3.65	Blossburg (smithing)	5.25
Peytona	5.70	Piedmont "	5.25

Per car, 12 tons.

Block coal, nut	$15.00	Block Slack	$12.00
Highland, "	14.00		

RETAIL BITUMINOUS.

Delivered per bushel of 70 lbs.

Raymond City	14c.	Block Nut, steam use	6c.
Brazil Block	10	" Slack, "	5
Highland Grate	9	Virginia Cannel	24
Block Nut, domestic use	10	Indiana Cannel	15
Highland Nut, " "	11	Youghiogheny	15
" " steam	8	Blossburg	24

GAS COKE.

Per bushel, measure containing 2888 cubic inches.

Retail, crushed	8c.	Wholesale, lump	6½c.
" lump	7	" crushed	7½

ANTHRACITE.

Per ton of 2000 lbs.

Wholesale on Cars.		*Retail delivered.*	
Wilkes-Barre, all sizes	$5 50	Wilkes-Barre, all sizes	$6.50
Lackawanna, "	5.75	Lackawanna, "	6.50
Lehigh "	6.75	Lehigh, "	7.50

Louisville, Ky. June 25, 1878.

[Specially reported by Messrs. BYRNES & SPEED.]

Wholesale per bushel of 72 lbs.

Pittsburg	8c.	Raymond City	7c.
Ashland (Ky.)	6	Kentucky, on cars	7

Retail.

Pittsburg	11c.	City made Coke, per bsh	7c.
Raymond City	10	Soft Coke, per bushel	7c.
Ashland (Ky.)	9	Cannel Coal	17
Pittsburg Nut	10	Anthracite, per ton	$7 50

Milwaukee, Wis. June 27, 1878.

[Specially reported by Messrs. R. P. ELMORE & Co.]

Retail price per ton of 2000 lbs.

Anthracite, Egg, and Chestnut	$5 50		
Stove size	6 50		
Lehigh lump	$6 50	Connellsville coke on	
Brier Hill	5 00	R. R. track	7 25
		Straitsville	4 80

Montreal. June 21, 1878.

[Specially reported by Messrs. ROBERT C. ADAMS & Co.]

Wholesale per 2240 lbs.

Scotch Steam	$4.00	Cape Breton Steam	$3.25
Pictou	3.60	Newcastle Smith's	5.00

Anthracite at retail, per 2000 lbs. delivered.

Stove	$6.00	Chestnut	$5.25
Egg	5.50		

New Orleans, La. June 21, 1878.

[Specially reported by Messrs. C. A. MILTENBERGER & Co.

PITTSBURG COAL.

At wholesale (by boat-load)	32½@35c. per bbl. of 180 lb.		
To steamboats	45c.	"	"
" manufactories	50c.	"	"
" families	60c.	"	"

In hhds. (for shipment) .... $5.50 per hhd. from 5 to 6 bbls.

ANTHRACITE COAL

Per ton of 2000 lbs.

At wholesale	$7 00 to $8 00
To families, etc	9 00 to 10 00

ST. BERNARD (KY.) COAL.

To steamboats	40c. per bbl. of 180 lb.		
" families	50c.	"	"
Virginia cannel to families	$1.00	"	"

Philadelphia.

PHILADELPHIA, Pa., June 27, 1878.

The Schuylkill region continues to work to the last day in June, and then stops until the 15th of July. Orders have been more plenty to save the advance in tolls, but many held back with the advance in freights of last week, when buyers preferred to risk the advance in freights and barely pay the advance in tolls. Freights have since declined, and rates are again $1.20@$1.25 to Boston.

The advance in tolls is in the shape of an advance on the minimum tolls, and is 15c. on stove and 10c. on all other sizes. The tolls continue to be 40 per cent of the price on board, subject to the new minimum.

The Schuylkill region is affected again with one of those mysterious contractions in car supplies at the collieries, reducing receipts considerably, and the cause of which nobody can explain. Some think it is done on purpose, and some that it is not. Either way is not a very creditable thing, and the advantage to be derived from it is as mysterious as the cause. It delays vessels, confuses the business, disappoints many, and does not seem to benefit any.

Pittsburg.

THURSDAY, June 27, 1878.

COAL—Overstocked markets and low prices are still without change, and have the usual effect of continuing the dullness of this trade. Two or three small tows of barges, with altogether about 350,000 bushels, have gone out on the insufficient rise in the river within the week. Had the flood been ample, but little more would have been sent. The business is exceedingly languid, and the general tendency is toward lower prices all round—to miners, to shipping expenses, to buyers and to consumers; so that the trade in all its parts appears to be settling to a conformity with the general stringency enforced by scarcity of money. At several of the collieries miners have gone to work at 2 cents per bushel, between which and 2½ cents the price fluctuates throughout the district. Most of the tugs have returned with pretty nearly all the boats and barges whose cargoes have been sold, leaving a majority of them still laden with the coal remaining on hand to be sold. This custom of holding the coal at the lower markets on board the vessels in which it is transported, until it is sold, adds largely to the tonnage that would be required were the cargoes discharged on arrival at destination. There having been no change in prices, we continue former quotations.

Wholesale, on board	5 cts. per bush.	$1.30 per ton	
Retail, delivered	7 cts.	" 1.84	"

Bushels are rated among dealers here at 76 lbs.—26½ bushels make a ton, nearly.

COKE.—No increased demand to enlarge production, which still continues at about a million and a quarter bushels per week. As business quickens and improves, there is no industry that will respond more promptly than this. At present, while there are no new places of consumption, all the old ones, widespread as they are between the two oceans, are uniform in their demands.

There is no alteration in price. We give quotations of home rates, in which 40 lbs. make a bushel, and 50 bushels a ton:

Wholesale, per bush	4@4½c.	Per ton	$2.00@$2.25
Retail	5@5½c.	"	2.50@ 2.75

The prices at other points where the Connellsville coke goes are the same as here, with the transportation added. —*American Manufacturer of June 28th.*

Pittston, Pa. June 25, 1878.

Pennsylvania Coal Company's Coal in Yard.

Retail per ton of 2,000 lb.

Lump, Egg, and Stove	$2 25
Chestnut	2 00
Pea	1 00

Delivered, 50 cents per ton additional.

Richmond, Va. June 25, 1878.

[Specially reported by S. H. HAWES, Dealer in Coal.]

Per ton of 2,240 lb. f.o.b.

Kanawha Cannel	$9.00	New River Bituminous	$3.40
Coalburg Splint	4.50	Clover Hill Coal	3.00
Lewiston "	4.50	Norwood Gas and Steam Coal	2.70
Kanawha Gas Coal	4.10		

San Francisco, Cal. June 20, 1878.

COAL.—Imports from January 1st to June 1st, 1878:

	Tons.		Tons.
Anthracite	4,998	Vancouver Island	60,332
Australian	19,162	Seattle	33,409
Coos Bay	12,055	English	15,507
Cumberland	701	Mt. Diablo	43,745
Bellingham Bay	2,300		

Sandusky, Ohio. June 25, 1878.

[Specially reported by C. E. BLACK, Agent Con. Coal and Mining Company.]

Per ton of 2,000 lb.

ANTHRACITE.

	Grate.	Egg.	Stove.	Chest.
Lehigh	$6 50	$6 50	$6 50	$6 50
Wilkes-Barre	5 75	5 75	5 75	5 75
Lackawanna	5 75	5 75	5 75	5 75

BITUMINOUS.

Massillon	$3 00	Straitsville	$2 70
Del Carbo	2 75	Shawnee	2 70
Hocking Valley	2 70	Blossburg	4 75

Prices retailed delivered 50c.@75c. above car prices.

St. Louis, Mo. June 26, 1878.

Reported by JAMES J. SYLVESTER, Secretary of the Anthracite Coal Association.]

Retail prices, delivered. Ton of 2000 lbs.

ANTHRACITE.

	Per ton.		Per ton.
Lackawanna	$7.50@.....	Lehigh	$8.50@.....
Wilkes-Barre	7.50@.....	Connells. Coke.	6.00@.....
Schuylkill	7.50@.....	Blossburg	7.75@.....

June 20, 1878.

[Specially reported by Messrs. LEWIS P. HARVEY & Co.]

Stocks of coal continue large, with fair demand for cheaper grades.

BITUMINOUS.

Big Muddy	$3.65	Piedmont	$7.25
Indiana Block	3.25	Pittsburg	4.35
Illinois Coals	2.25@2.50	Peytona	7.50
Blossburg	7.75	Lehigh Val. Ant.	7.50@8.00

[Specially reported by Messrs. GOSLINE & BARBOUR.]

Toledo, Ohio. June 27, 1878.

Ton of 2,000 lb.

Straitsville lump	$2 65	Massillon lump	2 85
" nut	2 20	" nut	2 40
Shawnee lump	2 65	Willow Bank lump	2 85
" nut	2 20	" nut	2 40
Hocking Valley lump	2 65	Cumberland	5 40
" nut	2 20	Blossburg	5 40

Prices of hard coals at retail in Toledo:

Ton of 2,000 lb.

	Grate.	Egg.	Chestnut.	Stove
Pittston	$5 00	$5 00	$5 00	$5 25
Wilkes-Barre	5 00	5 00	5 00	5 25
Lackawanna	5 00	5 00	5 00	5 25

FREIGHTS.

Ocean Freights.

Ocean Freights on coal, iron, etc., per ton of 2000 lbs., to and from foreign and domestic ports, for four weeks ending June 27th, 1878, are given below.

DATE.	From	To	Cargo.	R'te
May 27	Philadelphia	Aspinwall, C.A.	Coal	3.75
" 27	Philadelphia	St. Pierre, W. I.	Coal	2.00
" 27	Elizabethport	Sackville, N. B.	Coal	1.75
June 1	Roncout	Cuba	Coal	1.95
" 4	Hoboken	St. Johns, N. B.	Coal	1.00
" 4	Baltimore	Cienfuegos	Coal	†5.75
" 4	Philadelphia	St. Thomas, W.I.	Coal	2.50
" 6	Baltimore	St. Thomas	Coal	2.50
" 10	Philadelphia	Mantanzas	Coal	1.00
" 10	Philadelphia	St. Johns, N. B.	Coal	1.25
" 25	New York	St. Thomas, W.I.	Coal	2.75
" 26	New York	St. Johns, N. B.	Coal	1.00
" 27	Newburg	St. Johns, N. B.	Coal	1.10

*Shillings. †Return trip, Sugar.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to June 27, 1878.

PORTS.	From Philadelphia.	From Baltimore.	From Elizabethport, Fort Johnson, South Amboy, Hoboken and Weehawken.
Alexandria, Va.	67	.....	.....
Annapolis	.....	.....	.....
Bangor, Me	.....	1.40	.....
Bath, Me	.....	1.25	90
Baltimore	40@45†	.....	.....
Boston, Mass	1.25@1.40	1.30	80
Bridgeport, Conn.	.....	1.25	50
Bristol, R. I.	.....	.....	70
Beverly, Mass.	1.30	.....	80
Buffalo	.....	.....	.....
Cambridge, Mass.	1.20	.....	80
Cambr'g p't, Mass	1.40§	.....	.....
Charleston	1.20	.....	.....
Charlestown	1.35@1.40§	.....	.....
Chelsea	1.25	.....	.....
Danversport	.....	.....	.....
Derby	1.12†	.....	.....
East Cambridge	1.30§	.....	.....
Fall River	.....	1.25	65
Gardner, Me	.....	.....	.....
Georgetown, D.C.	.....	.....	.....
Gloucester	1.35	.....	.....
Hoboken	.....	.....	35
Jersey City	.....	.....	35
Kingsbridge	80	.....	.....
Lynn	1.35†@1 40	.....	.....
Medford	1.30	.....	.....
Middletown	.....	.....	90
Nantucket, Mass.	.....	.....	90
New Bedford	1.20	1.30	70
Newbern	1.10	.....	.....
Newburyport	.....	1.40	90
New Haven	85@90	1.25	50
New London	.....	1.25	60
Newport	1.16@1.22½	.....	65
New York	85†	1.20	35
New Orleans, La.	.....	.....	.....
Norfolk, Va	.....	.....	.....
Norwich	.....	.....	65
Norwalk, Conn	.....	.....	55
Pawtucket	1.20@1.25‡	.....	.....
Philadelphia	.....	.....	.....
Portland	.....	1.25	80
Portsmouth, N.H.	1.25@1.35	1.40	90
Providence	1 10@1.20	1.25	65
Quincy Point	1.30	.....	.....
Richmond, Va	.....	.....	.....
Rockland	.....	.....	.....
Rockport	.....	.....	.....
Roxbury	.....	.....	.....
Sag Harbor	1.17	.....	.....
Salem, Mass.	.....	1.30	80
Somerset, Mass.	1.20	.....	70
St. Johns, N. F.	.....	.....	.....
Wareham	1.30	.....	.....
Washington	65	.....	.....

*And discharging and towing. † And discharging. ‡ And towing. § 3c. per bridge extra.

Lake Freights on Coal and Iron Ore.

Representing the latest actual charters up to June 26th.

From	To	Rate per ton.	From	To	Rate per ton.
Ashtabula	Milwauk'e	30	Cleveland	Buffalo	35
"	Chicago	35	"	Chicago	40
Black Riv.	"	40	"	Milwaukee	40
Buffalo	"	35	"	Sheboyg'n	50
"	Portage	50	Escanaba	Cleveland*	70
"	Cleveland*	40	"	Toledo*	65
"	Pt. Austin†	10	F'r Haven	Chicago	80
"	Detroit†	30	Kincardine	"	50
"	G'd Haven	40	Oswego	"	80
"	Detroit	20	"	Milwaukee	60
Charlotte	Chicago	80	"	Detroit	45
"	Milwaukee	65	"	Mich. City	95
Chicago	"	20	"		

* Iron ore. † Cement per bbl.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, June 28, 1878.

American Pig.—There is so little business doing, and the market is so completely demoralized, that it is impossible to judge of its actual condition. The Thomas Iron Co. has sold about 500 tons of No. 1 x and No. 2 x iron at $18 and $17 respectively. This, however, was done under circumstances where the parties had to have that particular quality of iron, and in no way represents the condition of the market. It has come to light that 500 tons of No. 2 foundry Crane iron have been sold at $16.50, delivered in this city, terms 4 months and interest. This is equal to about $14.28 at works, and about $16 at Hoboken. The Thomas Iron Co. has blown out one of its furnaces. Unless an improvement, of which there is not the least indication, takes place soon, other companies must follow this example. The first of July will be followed with balance sheets and statements of the results of the business of the first six months of this year, and we fear that in many cases the showing will be so unfavorable as to bring consternation to many of the stockholders. We quote No. 1 foundry at $16.50@$18; No. 2 foundry, $15.50@$17; and forge, $14.50@16.

Scotch Pig.—The week under review has been one of the quietest this year. There has hardly been any business in a retail way, and none in 100-ton lots. We continue to quote Glencarnock at $23.50, Eglinton at $22.50, and Coltness $24.

According to Messrs. John E. Swan & Brothers' circular of June 14th, stocks in Connal & Co.'s stores were increasing, having reached 176,877 tons as compared with 113,248 tons at the corresponding date in 1877, while the number of furnaces in blast this year was but 90, as against 109 last year. The shipments to June 8th, as compared with the like period of last year, show a falling off of 23,722 tons, and the imports of Middlesborough pig-iron an increase of 2525 tons. The quotations of some of the special brands of No. 1 iron, on June 14th, were: Gartsherrie, 57s. 6d.; Coltness, 61s.; Summerlee, 56s.; Langloan, 57s. 6d.; Glengarnock, 55s. 6d.; Eglinton, 50s. 6d.

Rails.—We learn of no business in steel rails. The mills are so well booked ahead with orders that there is no anxiety shown to do business. In iron rails there is more business doing and considerable inquiry. We quote steel rails at mills at $42@$44, and iron rails at $31@$35.

Old Rails.—In the absence of business we quote at $17@$18.

Wrought Scrap is nominal, at $20@$21.

Baltimore, Md. June 24, 1878.

[Specially reported by Messrs. R. C. HOFFMAN & Co.]

The iron market continues dull, with light sales, at about following rates, viz.:

Balt. Char.	$26.00@$28.00	M. & White	$13.00@$14.00
Va. "	26.00@ 28.00	C'lC.B.Blooms	50.00@ 52.00
Anth.No.1	19.00@ 20.00	" " Billetts	52.00@ 55.00
" " 2	18.00@ 19.00	Refi'd Blooms	43.00@ 45.00
" " 3	16.00@ 17.00		

Chattanooga, Tenn. June 24, 1878.

[Specially reported by J. F. JAMES, Dealer in Iron & Metals.]

There has been no change in the condition of the iron trade South since my last report. Less pig metal is being moved at the present time than at any time known in the history of iron manufacturing South. Not one single item of interest to report, and the prospects very gloomy and discouraging. I quote as follows:

Tenn., Ala. & Ga. Charcoal, No. 1 Foundry	$16 00@$17 00		
Tenn., Ala. & Ga. Charcoal, No. 2 Foundry	15 00@ 16 00		
Tenn., Ala. & Ga. Charcoal, Gray Forge	13 00@ 15 00		
Tenn., Ala. & Ga. Coke, No. 1 Foundry	18 00@ 19 00		
Tenn., Ala. & Ga. Coke, No. 2 Foundry	16 00@ 17 00		
Tenn., Ala. & Ga. Coke, Gray Forge	14 00@ 15 00		
Charcoal or Coke, white and mottled	13 00@		
Tenn., Ala, & Ga. cld B. (car-wheel)	20 00@ 26 00		
Old rails	$18 00@$19 00	Wr'ght scrap, No. 2	$11 00
Old car wh'ls.	16 00@ 17 00	Cast scrap	10 00
Wr'ght scrap, No. 1	16 00	Muck bar	30 00@ 32 00

IRON ORES.

Red hematite or fossiferous f. o. c. at mines, about 55 per cent metallic iron	$1.25
Brown hematite, about 55 per cent metallic iron	1.75

Cincinnati, O. June 25, 1878.

[Specially reported by Messrs. TRABER & AUBERY, Commission Merchants for the sale of pig iron, blooms, ore, etc.]

Below please find closing quotations of our pig iron market, viz.:

CHARCOAL.

H'n'g Rock No. 1 Foundry & B 1	$21 00@$22 50	—4 mos.
" No. 2 "	20 00@ 21 00	—4 mos.
" Soft Silver Gray	19 00@ 20 00	—4 mos.
" Mill	18 00@ 19 00	—4 mos.
Tennessee No. 1 Foundry	21 00@	—4 mos.
" No. 2 "	20 00@	—4 mos.
" Mill	18 00@ 19 00	—4 mos.

STONE COAL.

Ohio No. 1 Foundry	$18 00@	—4 mos.
" No. 2 "	17 00@	—4 mos.
" Nos. 3 and 4 "	16 00@ 15 00	—4 mos.
" Mill	17 00@	—4 mos.

COKE.

Ohio & W. Va. No. 1 Foundry	18 00@ 19 00	—4 mos.
" " No. 2 "	17 00@	—4 mos.
" " Stove	16 00@	—4 mos.
" " Mill	17 00@	—4 mos.

CAR-WHEEL.

H'n'g R., C. B { Hecla, Vesuvius, Etna, Buckhorne	$35 00@	—4 mos.
Maryland, "Cedar Point	35 00@	—4 mos.
Missouri, "Maramec	30 00@	—4 mos.

BLOOMS.

Charcoal	$45 00@$50 00—cash.

SCRAP IRON.

Cast	40c. @ 45c.—cash.
Wrought	62½c.@ $1.00—cash

Columbus, Ohio. June 26, 1878.

[Specially reported by Messrs. KING, GILBERT & WARNER, Dealers in Pig Iron and Ores.]

FOUNDRY IRONS.

No. 1 Hanging Rock Charcoal	$22 50@$23 00
No. 2 " "	21 00@ 21 50
No. 1 Hocking Valley soft and strong from pure limestone ores	19 00@ 19 50
No. 2 Hocking Valley soft and strong from pure limestone ores	18 00@ 18 50
No. 1 American Scotch	@ 18 50
No. 1 Moxahala	19 00@ 19 50
No. 2 "	18 00@ 18 50
No. 1 Shawnee	19 00@ 19 50
No. 1 Eliza (Jackson County)	19 00@
Silver Gray	16 50@ 17 00

MILL IRONS.

Gray neutral	17 00@ 17 50
Mottled and white neutral	16 00@ 16 50
Gray cold short	16 00@ 16 50
Mottled and white cold short	15 00@ 15 50

Cleveland, O. June 25, 1878.

[Specially reported by Messrs. C. E. BINGHAM & Co.]

Per gross ton, on four months' time. Subject to change without notice.

FOUNDRY IRON.

No. 1 L. S. Charcoal	$24 00	Am. S., No. 1, Ch. Val.	$22 00
No. 2 " "	24 00	" " B—1, " "	21 00
No. 1 Anthracite	21 00	" " No. 2 " "	19 00
No. 2 "	19 00	No. 1, Massillon	22 00
No. 1 Bituminous	21 00	B—1, "	21 00
No. 2 "	19 00	No. 2, "	20 00

CAR-WHEEL AND MALLEABLE IRON.

No. 3, L. S. Charcoal	$25 00	Nos. 5 & 6, L. S. Char.	$25 00
No 4, " "	25 00		

BESSEMER IRON.

Nos. 1 & 2, L. S. Char	$24 00

FORGE IRON.

No. 1, Gray	$18 00	White and Mottled	$17 00

Iron Ores.

Red Hematite (about 55 per cent. metallic iron) f. o. c. at mines	$1 25
Brown Hematite (about 55 per cent. metallic iron)	1 75

Louisville, Ky. June 25, 1878.

[Specially reported by Messrs. GEORGE H. HULL & Co.]

No improvement in either demand or prices, and but little change in the existing condition of things looked for before next month.

The usual time, 4 months, allowed on quotations below:

FOUNDRY IRONS.

	No. 1.	No. 2.
Hanging Rock Charcoal	$21 00@$22 00	$18 00@$20 00
Southern Charcoal	@ 19 00	16 00@ 17 00
H'n'g Rock, Stc'l & Coke	19 00@ 20 00	17 00@ 18 00
Southern Stonecoal & Coke	17 00@ 19 00	16 00@ 17 00

"Amer. Scotch"... $18@$20 | Silver Gray... $15@$17.00

MILL IRONS.

No. 1 Charcoal, Cold-short & Neutral	$16 00@$17 00
No. 1 Stc'l & Coke, Cold-short & Neutral	16 00@ 16 50
No. 2 Stc'l & Coke, Cold-short & Neutral	15 50@ 16 00
No. 1 Missouri and Indiana, Red-short	20 00@ 21 00
White & Mottled, Cold-short & Neutral	13 00@ 15 00

CAR-WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold Blast	$30 00@$32 00
Alabama and Georgia, Cold Blast	25 00@ 30 00
Kentucky, Cold Blast	23 00@ 26 00

Philadelphia, Pa.

June 27, 1878.

[Weekly Report of the Philadelphia Iron Market, furnished for THE ENGINEERING AND MINING JOURNAL by JUSTICE COX, Jr., & Co., Iron Merchants, 333 Walnut street, Philadelphia, week ending June 27th.]

Pig Iron.—The six months just closing have been about as unsatisfactory as could be. The many wrecks by the way show how hard the storm has been and how many firms which a year ago were considered as firm as a rock, are now either working on an extension granted by their creditors or wholly stopped. Iron has dropped steadily, until it is now selling far below the cost of production. How much longer this will continue time only can show; while some must run to meet payments, others, to hold their trade, if continued in, all will be bankrupt. It is hoped that, after stock-taking time is over and balances are struck, many companies will find they must either get higher prices or blow out. This will give a stimulus that will give us better prices for the balance of the year. We have only the few hand-to-mouth sales to report, of about 1000 tons in all, and quote No. 1 $17 to $19; No. 2, $16 to $17; Pig Forge, $15.50.

Manufactured Iron.—Nothing new to report in bars. Low prices for common stock are ruling, and strong, first-class brings full price. We quote 1 65-100 to 2c. per lb. In plate and tank little is doing. We quote 2 3-10 to 6c. per lb. Nothing to report in skelp. We quote 2c. per lb.

Rails.—Nothing new to report in steel. In iron more business is reported. We quote in steel $44 to $45; in iron, $32 to $33.50, all at mills.

Old Rails.—The demand for old Rails is exceedingly light, no large sales being reported. We quote $18.50 to $19.50.

Pittsburg, Pa. June 25, 1878.

[Specially reported by A. H. CHILDS.]

The metal market is without improvement since last report, and, indeed, none is looked for before the middle or latter part of July. Many of the mills are now stopped, and others are preparing to stop for their regular summer repairs, and for taking stock. In the mean time, stocks are accumulating and prices rather weaker. Quotations are:

	4 mos.		4 mos.
No. 1 F'dry	$19.00@$20.00	M. & White	$15.00@$16.00
No. 2 "	18.00@ 19.00	Hot Blast Ch.	20.00@ 23.00
Gray Forge	16.50@ 19.00	Cold Blast W.	35.00@ 37.00

Richmond, Va. June 26, 1878.

[Specially reported by ASA SNYDER, Esq.]

Amer. Scotch Pig Iron			$22.00@$23.00
Anthracite	" "	No. 1	19.00@ 20.00
"	" "	No. 2	18.50@ 19.00
"	" "	No. 3	17.00@ 18.00
"	"	Mottled	15.00@ 16.00
Coke	"	No. 1	19.00@ 20.00
"	"	No. 2	18.00@ 19.00

Va. Cold Blast Charcoal Pig Iron, cold short		19.00@	22.00
" " " " " " neutral.		27.00@	29.00
" Warm " " " "cold short		18.00@	20.00
" " " " " " mill.....		17 00@	18 00
Old Rails		16.00@	17.00
Wrought scrap No. 1		17.00@	18.00
Cast scrap—Machinery		17.00@	.....
Richmond Refined Bar Iron		2.00@	2.10
Horse-shoes		4.25@	4.50
Mule-shoes		5.50@	.. ..
Old Dominion nails (standard size)		2.50 keg.	

Freight by sail to New York, $1.60 for 2240 lbs.

St. Louis, Mo. June 25, 1878.

[Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.]

Pig-iron business for the past week has been very quiet. This being the dull season, we anticipate no change until after July. Old rails are in fair demand, and prices low.

COLD BLAST CHARCOAL—ALL NUMBERS.

Hanging Rock	$28@$33	Assorted Bar Iron	$1.75	rates.
Tennessee	25@ 30	No. 1 Wr'ght Scrap,	70c.	cwt.
Kentucky	25@ 30	Heavy cast "	60c.	"
Missouri	25@ 30	Light "	40c.	"
Georgia	25@ 30	Old rails	$19 00@	$20 00
Alabama	25@ 30	Old carwheels	17 00@	18 00

	No. 1.	No. 2.	Mill.	White and Mottl'd
Missouri stone coal	$22 00	$21 00	$19 00	$17 00
" charcoal	20 00	19 00	18 00	16 00
Tennessee charcoal	20 50	19 00	17 50	16 00
Tenn. coke very soft and strong	20 00	19 00	17 00	15 00
Hanging Rock charcoal	24 00	23 00	21 00	20 00
" " cold short	23 00	21 00	20 00	.....
	ExNo.1	No. 1.	BNo.1.	No. 2.
Alice Hanging Rock coke	$23 00	$22 00	$21 00	$19 00
Moxahala Black Band ores	23 00	22 00	21 00	19 00

METALS.

NEW YORK, Friday Evening, June 28, 1878.

With the exception of lead the market has been exceedingly quiet. This, however, is not unusual for this season of the year, and, if we can be guided by history, we need not look for much change before the latter portion of next month, and from present indications we can expect but little encouragement then. Our foreign mail advices show a much better feeling in the European metal markets, owing to prospects of peace. When political matters become quite settled, there will unquestionably be a reaction from the excessive stagnation that has ruled so long.

RECEIPTS OF METALS AT NEW YORK FOR THE FOUR WEEKS ENDING JUNE 27th, AND YEAR FROM JANUARY 1st, 1878.

	June 6.	June 13	June 20.	June27	Year from Jan. 1.
Copper, bbls	1,162	1,126	974	898	9,203
Copper, boxes	.....	.....	.....	.....	113
Copper, cakes	517	375	1,608	8	7,955
Lead, pigs	2,841	3,093	2,565	3,686	160,739
Spelter, pieces	1,728	.....	.....	1,038	26,100
Quicksil'r, flasks	25	25	100	.....	683

Gold Coin.—The price of gold during the week under review has ranged from 100⅜ to 100¾, and closed at 100¾.

Bullion.—The silver market abroad has been steadily declining during the past week. Under the award of the Indian Council Bills on Wednesday at still lower rates than those of the previous week, the market became quite unsettled, and remains nominal and weak at our quotations. The prospect is rather for lower than higher prices for the present. The London quotation is 52⅝d.; New York 114¾, and San Francisco 10 per cent discount. Gold bars are quoted at ⅛@¼ per cent premium.

DATE.	London Pence.	N. Y. Cents.	DATE.	London Pence.	N. Y. Cents.
June 22	52 15-16	115⅛	June 26	52⅝	114⅛
June 24	52 15-16	115⅛	June 27	52¾	115
June 25	52¾	114⅞	June 28	52⅝	114¾

We give below a statement showing the latest bullion shipments in addition to those announced in our issue of June 22d.

BULLION SHIPMENTS.

June 18.	Star,	Nevada	$5,539.00
" 12.	Modoc,	"	9,991.32
" 15.	Pioche,	"	15,900.00
" 14.	Tybo cons.,	"	12,122.24
" 18.	Manhattan,	"	12,600.00
" 17.	California,	"	188,630.19
" 16.	Con. Virginia,	"	208,500.59
" 14.	Raymond & Ely,	"	3,935.20
" 17.	Northern Belle,	"	14,282.32
" 10.	Gila,	Arizona	5,289.00
" 12.	Tiptop,	"	6,297.56
" 19.	Signal,	"	3,600.00
" 17.	McCracken,	"	8,900.31
" 17.	Christy,	Utah	5,144.00
" 15.	Ontario,	" *	31,521.86
" 19.	Germania,	"	7,300.00
" 19.	Silver Reef,	"	28,488.52
" 19.	Old Telegraph,	"	2,900.00
" 11.	Atlanta,	Idaho	7,185.00

* From 9th to 15th inclusive.

The Currency of China.—WASHINGTON, June 25.—The Department of State has received a very interesting memorandum on the currency of China, from Mr. Seward, United States Minister at Peking. The Chinese Government issues no gold or silver coins. The pieces called by the natives "ch'ien," by the English "cash," and by the French "sapequé," from the Portuguese *sapeca*, are of copper, variously alloyed. They are cast, not minted, and are circular, with square holes in the center, used in stringing them together. Their standard value is the one-thousandth part of a tael of silver, according to the Chinese Treasury scale. By a curious fiction each piece of cash is called two (cash). Their actual value in circulation, as compared with silver, varies at the several ports thus: 1909 cash are required to purchase a tael's weight of silver at Newchwang, and but 1668 at Swatou. Their value has fluctuated in 14 years as much as 33⅓ per cent. Counterfeits of these copper tokens abound. Their purchasing power is very uniform, and they practically constitute the standard currency of the Empire. Great abuses have been practiced in their coinage. In the Sung dynasty (960 to 1127 A. D.) they were made "so small that they were called geese eyes, and so thin that they would swim upon the water." Silver passes by weight, but the standard of the tael varies appreciably in the different provinces and ports. The Kuping tael is the most general standard in use, but the Haikwan tael is used in collecting Customs duties. The relation of silver to gold is very variable. The lowest quotation for 30 years past is 1 to 12·8 (at Shanghai in 1855), the highest 1 to 17·5 (at Peking in August, 1876).

The following is a statement of the business at the United States Assay Office at New York for the month ending May 31st, 1878:

Deposits of gold		$794,000
Deposits of silver—Miscellaneous	$109,000	
Colorado	450,000	
Lake Superior	35,000	
Montana	75,000	
Nevada	620,000	
New Mexico	27,000	
Utah	275,000	
		1,591,000
Total deposits		$2,385,000
Silver bars stamped		348,774
Transmitted to Mint of the United States at Philadelphia, for coinage, gold		636,952

Copper.—The business of the past week has been a very quiet one. Sales have been mostly at 16¼c., with some from dock at 16c. The closing of mills for about a fortnight after July 4th will make the demand very light. Chili Bars are quoted, in London, according to latest cable advices, at £63@£63 10s., and Best Selected at £69@£69 10s.

Tin.—There is but very little business doing in pig tin. Sales of Straits have been made at 16½c. on spot, although the nominal asking prices are 14¼@14¼c. L. & F. is quoted at 14@14⅛c.; Banca, 17¼c.; and Refined, 14¼c. Straits, in London, is quoted at £62 10s.; at Penang, $17.75; and Singapore, $18.37½, with exchange at 3s. 11d.

Tin Plates.—These are exceedingly quiet. We quote, in gold, per box, as follows: Charcoal tins, $5.75@$6, and ternes, $5.45@$5.62½; coke tins, $4.87½@$5, and ternes at same price.

Messrs. Robert Crooks & Co., of Liverpool, under date of June 13th, say of tin and terne plates:

"Very much the same condition of affairs exists as noted in our last, with this additional element, that the buying when the low prices are taken is decidedly vigorous, and indicates more faith in the future on the part of buyers than they have for some time shown."

Lead has shown a very quick and quite unexpected turn in price. On Monday 300 tons were sold at 3·15c., after which the market steadily advanced, with small sales, up to 3½c., closing at 3½@3⅝c., with some parties asking 4c. It has been known that there are about 6C00 tons of lead in and about New York, and with this knowledge buyers felt quite secure in the low prices that were ruling, and were anticipating that they would go still lower. But suddenly the holders of lead either practically withdrew from the market or asked a considerable advance, and at the close we find them firm in the same position. It was also discovered that there was but little lead in the country outside of our market, the St. Louis market being quite bare. In a money market so exceedingly easy as we now have, it may not be difficult to hold prices where they are or even advance them, but the market must at periods drop to a price that will permit us to export our surplus production. The English market, however, has advanced during the past week 5s. @ 10s. per ton, and it is a well-known fact that many of the foreign mines find it more difficult to contend with the low prices that have prevailed than do most of the Missouri mines. With peace in Europe, a larger demand for lead will probably be brought about, for although much lead is consumed in times of war in bullets, yet a much larger amount is consumed in times of peace in the arts.

Spelter and Zinc.—Large sales of spelter are reported to have been made in the West during the past week. We continue to quote at 4⅝c. Sheet zinc is in but moderate demand and quoted at 6c.

Antimony.—Cookson's has sold down to 12¼c. under liberal arrivals, but quoted at the close at 12½c. Hallett's is quoted at 11¼@12c.

Salt Lake Ore and Metal Market.

SALT LAKE CITY, Utah, June 28, 1878.

Argentiferous Lead (Base Bullion), $25 to $27 per ton for lead; $1.15 per ounce for silver; $20 per ounce for gold. The quotations for silver are based upon the silver in the lead of 80 to 120 ounces per ton of 2000 lb.

The *Inter-Ocean's* correspondent, under date of the 17th inst., says: "The lead market in New York is still reported dull, with prices ruling very low. The whole trouble seems to be that we produce more than we consume, and we must increase our consumption or reduce our production. It is strange that builders do not roof with sheet lead at present prices: it must be as cheap as tin plate, and very much better, being ten times as durable and easier kept tight. The shipments of lead and bullion for the week ending June 15th are as follows: Morgans, three cars bullion to Omaha; Telegraph, nine cars bullion to Omaha; Waterman, four cars bullion to Pittsburg; Mingo, three cars bullion to Pittsburg; Campbell, ten cars bullion to Chicago; Germania, five cars lead to San Francisco. Bullion, 659,812 lbs.; lead, 102,893 lbs.; total, 762,705 lbs."

FINANCIAL

New York Stocks.

NEW YORK, Friday Evening, June 28, 1878.

Of the business transacted in the coal stocks during the past week, on the New York market, amounting to about 124,000 shares, 102,799 shares were in Delaware, Lackawanna, and Western Railroad. Final sales were made in this stock to-day at 58. The highest price for the week, however, was 59⅜ on the 27th, the day following the auction sale, against 57¾ on the day preceding the sale. Delaware and Hudson does not exhibit the same comparative strength as that of its contemporary. D., L., and W. closed at 56¾, with sales of 4230 shares.

Central, of New Jersey.—This stock has sold to the extent of 16,323 shares, at prices ranging from 30¾ to 34⅞, closing at 34⅛. At a recent meeting of the directors of this company, the resignation as director of John Taylor Johnston was presented and accepted. Mr. Johnston being the only possible rival to Receiver Lathrop for the presidency of the reconstructed company, the election of Mr. Lathrop to the office is now regarded as certain. The agreement which floating debt creditors are asked by the Receiver to sign is as follows:

"That we will accept, in full payment and satisfaction of all sums severally due to us, income bonds of the said company of the issue described in the agreement for the equitable adjustment of the affairs thereof, dated February 25d, 1878, equivalent at par to the amount of said sums, and to be delivered on the first day of July, 1878.

"Or 50 per cent of said sums in cash, payable in three equal installments, at six, nine, and twelve months from said day, during which period the time for payment of said sums is extended; provided, however, that in the latter case our option to take such obligations in lieu of bonds shall be notified to said Receiver in writing before said day.

"On receipt of payment as aforesaid, we will surrender all evidences of indebtedness held by us representing the said sums due to us.

"This agreement shall be void upon failure of said Receiver, upon demand, to deliver said bonds or pay said installments within ten days after the time hereinbefore limited."

Malone and Belmont R. R.—The owners of the Chateaugay Iron Works, in Franklin County, N. Y., have offered to build a railroad from the Ogdensburg and Lake Champlain, at Malone, N. Y., southeast to Belmont, provided the town of Malone will contribute $50,000. The distance is about 12 miles.

We note a sale of 50 shares of Consolidation Coal Company's stock at $25 per share.

Manganese Iron Co.—The annual meeting of the stockholders of this company will be held July 8th.

North Chicago Rolling Mill Co.—The annual meeting of the stockholders of this company will be held in Chicago, July 15th.

Philadelphia Stocks.

PHILADELPHIA, Friday Evening, June 28, 1878.

A little better feeling is observable in the quotations of the coal stocks at Philadelphia: the sales for the week amount to about 65,000 shares; of this, 90,904 shares of the stock of the Pennsylvania Railroad sold at from 29¼@31⅝, at which it closed. Lehigh Coal and Navigation stock closes at 17⅜, with sales of 1663 shares. 813 shares of Lehigh Valley stocks changed hands at from 37½@38½, closing at 38⅜.

Philadelphia and Reading stock has ranged from 15⅞ to 16¼, and closes at 16⅛, with sales of 12,742 shares. This company's report for May and the six months of its fiscal year ending May 31st, is as follows:

	May—		Six months—	
Gross rec'ts:	1878.	1877.	1878.	1877.
Railr'd traffic	$1,101,497	$1,151,795	$4,963,695	$5,352,556
Canal traffic	124,997	152,643	201,391	290,741
Steam colliers	51,291	65,596	275,680	352,447
Richmond barges	8,230	17,294	35,006	44,544
Total R. R. Co.	$1,286,015	$1,387,328	$5,475,772	$6,040,288
Coal & Iron Co.	683,695	1,051,409	2,961,692	3,772,628
Total	$1,969,710	$2,438,737	$8,437,464	$9,812,916
Traffic:				
Passengers	523,395	582,155	2,978,331	3,104,986
Tons freight	287,803	287,447	1,572,072	1,480,265
Tons coal	513,614	777,780	2,204,007	2,943,982
Tons coal on colliers	60,999	60,646	267,606	266,413
Tons coal mined:				
Coal & Iron Co.	240.057	380,714	1,043,810	1,388,418
Tenants	103,052	164,926	398,532	569,753
Total	343,109	545,640	1,442,342	1,958,171

The earnings of the railroad company show a decrease of $101,313, or 7·3 per cent, for the month, and $564,516, or 9·3 per cent, for the six months.

COUPONS on the following bonds will fall due during the month of July :

Susquehanna Coal Co.—Coupons.
West New Jersey Marl and Trans. Co.—Coupons.
Allegheny Valley R. R. Co.—7·30s of 1896, coupons.
Pennsylvania R. R. Co.—1st Mortgage 6s. Gen. Mortgage 6s, and Navy Yard 6s, coupons.
Philadelphia and Reading R. R. Co.—6 per cent bonds, New Conv. 7s. debentures and scrip bonds, coupons.
Philadelphia and Reading Coal and Iron Co.—1st Mortgage 7 per cent and scrip bonds, coupons.
Shamokin Valley and Pottsville R. R. Co.—7 per cent bonds, coupons.
Chesapeake and Delaware Canal.—6 per cent bonds, coupons.
Lehigh Nav. Co.—6 per cent. bonds (quarterly), coupons.
Pennsylvania Canal.—6 per cent bonds, coupons.
Schuylkill Nav. Co.—2d mortgage 6 per cent conv. mortgage and scrip bonds, coupons.
Susquehanna Canal Co.—6 per cent and 7 per cent of 1902 and scrip bonds, coupons.
Saltsburg Coal Co.—1st mortgage loan, coupons.

DIVIDENDS.—The following companies have their dividend period during the month of July :

East Pennsylvanin R. R. Co.
East Mahanoy R. R. Co.
Mill Creek and Minehill R. R. Co.
Mount Carbon and Port Carbon R. R. Co.
Lehigh Valley R. R. Co.
Little Schuylkill R. R. Co.
Minehill R. R. Co.
North Pennsylvania R. R. Co.
Schuylkill Valley Nav. and R. R. Co.
United Railroad Companies of New Jersey.
Schuylkill Navigation Co.
Buck Mountain Coal Co.
Fulton Coal Co.
Nescopec Coal Co.
Diamond Coal Co.
Locust Gap Improvement Co.

Miscellaneous Stocks and Quotations.

Sales and quotations of the stocks and bonds dealt in here, at Philadelphia and Baltimore for the week ending the 28th inst are given in the following tables. The Philadelphia quotations will have a * affixed. The Baltimore quotations are indicated thus †.

STOCKS.	Par Value.	High'st	Lowest	Closing	Sales : Shares.
American Coal Co.	$25	... ..	.....	28	.....
St.L.,I.M.& S.R.Co..	100	6¼	6	6¼	300
Spring Mt. Coal Co.	50	.....	.....	50	.....
*Cambria Iron Co..	50	.....	.....	53½	.....
*Penn.Salt Mf'g Co.	50	.....	.....	65	.....
*Westm'land C. Co.	50	.....	.....	60	.....
*Buck Mt. Coal Co..	50	.....	.....	34	.....
*Schuyl. Nav. Co...	50	.....	.....	.....	.....
†B.&O.RR.Co.1st pf	.....	.....	.....	96	.....
†B.&O.RR.Co.2d pf	100	.....	.....	.....	.....
" " " com	100	81¼	80⅝	80	17
†George's C'k C. Co	100	.....	.....	85	.....
†S. Clara M'g Co...	100	.....	.....	25c.	.....
†Atlantic Coal Co..	10	.....	.....	91c.	.....

BONDS.	Princ'l. When Due.	Int'est. When Due.	Hig'st.	Lowest	Amount.
D., L. & W., 7s, conv	1892	J. & D.	.....	.....	.....
" " " " 2d mtge.	1881	M. & S.	106	.....	1,000
N.J.C.,1stmtge.new	1890	F. & A.	.....	.....	.....
" " " 1st mtge.,con	1899	Q.	*73	*71⅛	*57,000
" " " convt.....	1902	M. & N.	82	....	†47,000
Lehigh & W. B., con	1899	Q.	51	49	68,000
Am. Dock & Imp. 7s	.....	J. & J.	50	.....	3,000
St.L.I.M.& S..1st mt	1892	F. & A.	108¾	.....	2,000
Ches. & O., 1st mtge	1899	M. & N.	29	28	7,000
D & H C Co.,1stm.rg	1884	J. & J.	99	.....	4,000
" " " " "	1891	J. & J.	.....	.....	.....
" " " " m.loan cp	1894	A. & O.	100⅛	100	16,000
" " " " " rg.	1894	A. & O.	101	.....	10,000
" " " " new mge.	.....	.....	.....	.....	.....
*L.V.R., 1stm.6s.cp.	1898	J. & D.	109	.....	5,000
" " " " rg.	1898	J. & D.	.....	.....	.....
" " " 2d m. 7s,rg.	1910	M. & S.	.....	.....	.....
" " " con.m.6s,rg	1823	J. & D.	96½	.....	3,000
" " " 6s cp.	1923	J. & D.	97	.....	1,000
*Pa.RR.,1st m.6s,cp	1880	J. & J.	.....	.....	.....
" " g. m., 6s, cp.	1910	J. & J.	110	109¾	3,000
" " " 6s, rg.	1910	A. & O.	109	.....	5,000
" " con.m.6s,rg.	1905	Q.	.....	.....	.....
" " " 6s, cp.	1905	J. & D.	93¼	93	4,000
" " new loan, 5s	.....	.....	.....	.....	.....
*P.& R. R., 1st m.6s, R. C. 43-44.....	1880	J. & J.	106	.....	3,000
P. & R. R., 1st m. 6s, R. C. 48-49.....	1880	J. & J	.....	.....	.....
P.& R. R.,2d m.7s cp	1893	A. & O.	.....	.....	.....
" " " scrip....	1882	J. & J.	63	62	12,255
" " " in.m.7s,cp	1896	J. & D.	.....	.....	.....
" " " c.m.7s,cp.	1911	J. & D.	102½	101½	6,000
" " " " 7s. rg.	1911	J. & D.	102	101½	4,000
" " " cvt.7s,R.C	1893	J. & J.	55¼	54	9,500
" " C.& I.Co.,Deb 7s, R. C.....	1892	M. & S.	60	.....	2,000
& R.C.& I. Co., m. 7s, R. C.....	'92-3	various	.....	.....	.....
L. Nav. Co.,6s,rg.m.	1884	J. & Q.	105	104½	1,200
" " RR., rg. m.	1897	F. & Q.	104	.....	2,900
" " cvt. co. G. R.	1894	M. & S.	94	.....	3,000
" " " Gold R. C.	1897	J. & D.	89	88½	6,000
" " con.m.7s,rg.	1911	J. & D.	70	.....	2,000
*P.& N.Y.C.,7s,R.C.	1896 1906	J. & D.	112	111½	2,000
*Pa Canal, 6s, cp..	1910	J. & J.	.....	.....	.....
*Schuyl.Nav.,1st m. 6s. rg.....	1897	M. & Q.	.....	.....	.....
*Sus.Coal, 6s, rg...	1911	J. & J.	.....	.....	.....
†Balt.&O. RR., 6s..	1880	J. & J.	.....	.....	.....
" " " " 6s..	1885	A. & O.	104⅜	.....	500
Total transactions for the week.....					$290,855

* Assented. † 32,000 of the whole were assented, selling at from 68 to 69½. ‡ Ex-Interest.

Gas Stocks.

NEW YORK, Friday Evening, June 28, 1878.

There is nothing new in gas stocks, the market remaining in the same depressed condition that we have been noting all along. The People's Gas Company, of Brooklyn, has advanced from $15 to $20 bid, having recovered from the fall of last week. The most noticeable decline is in Manhattan, from $190 to $180 bid.

The Pittsburg Gas Question.—The Gas Committee of this city held a meeting on the 22d inst. The contract for furnishing lamp-posts and lamps was awarded to Samuel Morrow, at $14 each for the year.

Allegheny City, Pa., is to have a gas company with a capital of $100,000.

Naphtha Gas in Saginaw, Mich.—The Michigan Gas-Light Co. has an order to put up sixty naphtha lamps in Saginaw. It is not unlikely that naphtha will supersede gas there entirely.

Northern Liberties Gas Co., Philadelphia.—The dividend period of this company occurs during July.

The following list of Companies in New York and vicinity is corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad street, New York:

COMPANIES IN NEW YORK AND VICINITY.	Capital Stock.	Par.	DIVIDENDS. Rate per ann.	DIVIDENDS. Am. of last.	DIVIDENDS. Date of last.	QUOTATIONS Bid.	QUOTATIONS As'd
	$		P. ct.				
Mutual, N. Y....	5,000,000	$100	6	1½	Apr., '78	74	78
" Bonds...	90,000	1,000	6	3½	Feb., '78	.....	102
N. York "	4,000,000	.....	8	4	May, '78	95	100
Metrop. "	2,500,000	100	10	5	Feb., '78	129	135
" Certfs...	1,000,000	.....	7	3½	" '78	100	103
" Bonds...	500,000	1,000	7	3½	Dec., '77	102	...
Harlem "	1,850,000	50	6	3	Feb., '78	80	86
Manhat. "	4,000,000	50	....‡	5	May '78	180	190
Brooklyn, Bkln.	2,000,000	50	15	5	Apr., '78	140	150
Nassau	1,000,000	25	....‡	3	Jan., '78	70	80
" Certfs...	700,000	1,000	7	3½	May, '78	90	97
People's.....	1,000,000	10	....‡	3½	Jan., '77	20	30
" Certfs....	300,000	1,000	7	3½	Jan., '78	75	85
" Bonds...	325,000	.....	7	3	Feb., '78	90	96
Metrop. "	1,000,000	100	5	2½	May, '78	....	60
W'msb'g "	1,000,000	50	8	2	Apr., '78	75	82
" Certfs...	1,000,000	.....	7	3½	Jan., '78	95	100
Citizens'.....	1,200,000	20	....‡	3	Jan., '78	70	80
" Certfs...	320,000	1,000	7	3½	Apr. '78	97	100
J. C., N. J.....	750,000	20	10	5	July, '77	155	165
Municipal, N. Y.	466,000	50	7	4	July, '77	95	100
" Bonds..	750,000	.....	.....	.....	.....	.....	...

Copper Stocks.

Reported by WILSON W. FAY & Co., Brokers in Mining and Miscellaneous Stocks, Room 7, Traveller Building, 31 State street

BOSTON, Wednesday Evening, June 26, 1878.

The improvement in the state of the market, which we have so long been expecting, has at last arrived, and the general public are again taking an interest in this line of stocks which bids fair to terminate in a desire to speculate in them, and the gratification of that desire is all that is necessary to make a more active market than we have had on "coppers" for some years. It is evident that the proper time has arrived for a "turn" in these stocks, as the whole market appears to be on the rise, and there have been some of the largest bull movements the past few months that we have seen for some time; and the "coppers" are already feeling the effects of it, for stocks that have been quiet for the past year are suddenly springing into activity and showing that the copper stocks are by no means yet dead

Calumet and Hecla sold down to 177 and up again to 180, and closes strong at 179¾@180.

Copper Falls has strengthened and sold at $1, and closes firm at ⅞@$1.

Allouez sold up to $4, but has since weakened, and closes at $3@$4.

Franklin has spurted up to 6½, and sold at that figure, and closes firm at 6¼@6¾.

Osceola is firm at 9½@10, with sales at 9.

Pewabic sold up to 1⅞, and closes firm at 1¾@2¼.

Quincy sold down to 123¾, but stiffened again, and closes at 13@13¼.

Ridge has also spurted and sold up to 1⅝, but has had a slight reaction, and closes firm at 1¼@1½.

Duncan is as active as usual, having sold up to $7 to-day and back again to $6 this afternoon, and closes strong at $6¼@$6¾.

International sold up to 1¼, but has also fallen off somewhat, and closes firm at 1@1⅛.

Osceola Copper Mining Co.—The Portage Lake *Mining Gazette* has the following : "The annual report of the Osceola Consolidated Mining Company, filed with the County Clerk, shows its condition to have been as follows on Dec. 31st, 1877 :

	Amount.
Cash paid in on capital stock.....	$480,000.00
Capital paid in by conveyance of property to the Corporation.....	400,000.00
Entire amount invested in real estate	498,883.51
Amount of personal estate.....	226,768.55
Amount unsecured or floating debt of Corporation.....	81,131.40
Tons of copper obtained 1387 tons 777 lbs.	

"The above statement shows that the increase in the amount of personal estate from December 31st, 1876 to December 31st, 1877, was $66,055.66. The decrease in the item of unsecured or floating debt, for the same period, was $48,878.41. The report of 1876 shows $168,872.68 due the company; the report for 1877 shows nothing due.

"It is the intention, at an early date, to enlarge all the cylinders of the Ball's heads in the Atlantic stamps, put in a few more mineral washing machines, and then increase the reduction capacity of the works about 100 tons of rock per day, which will add about 20 tons of copper a month to the yield of the mine. To accomplish this, the expense of furnishing extra dressing plant will be trifling, while the cost of mining, handling, transporting, and treating in the mill the additional rock will be very low, as it will reap the benefit of an already established official mine force, working plant, railroad, etc., and participate in other advantages that are at once apparent."

Gold and Silver Stocks.

NEW YORK, Friday Evening, June 28, 1878.

There has been more activity at the Mining Exchange during the past week, and to prevent a dearth of business which was likely to occur with the warm weather, the low-priced stocks have been taken hold of with the result of creating a corner in Dahlonega and running the price up from 19c. to 41c., after which the pool broke and the price dropped to 20@19c. The total sales of this stock have amounted to 42,900 shares. American Flag, with sales of 22,900 shares, advanced from 15c., early in the week, to 27c. to-day. $16,200 is a very good price for an exceedingly doubtful claim of title to an unworked property. Bertha and Edith, with sales of 40,900 shares, has advanced from 6c., early in the week, to 9c. to-day. This has been the result of sympathy with the other "fancies." The business in Lacrosse has been quite large, aggregating 67,700 shares, advancing from 29c. to 41c. There are no new developments on this company's property. There is said, however, to have been a pool formed to create a rise in this stock. Gold Placer has had a weak tendency, selling at 64c. last Saturday, 50c. on Wednesday, 57c. yesterday, and 51c. to-day, closing at 53c. The total sales of this stock were 8200 shares. After deducting the sales of the low-priced stocks, which amount to but little in dollars and cents, there remains a business of only about 12,000 shares.

A resolution has been passed by the Mining Exchange to call regularly all the San Francisco stocks reported by the Associated Press. There has been a business in these during the week as follows : California, 475 shares at $19¼@$15, a considerable increase in the business in this stock as compared with previous weeks ; in Consolidated Virginia but 50 shares at $14½@$14 ; in Leviathan, 1300 shares, at 30@45c. ; Northern Belle, 20 shares, at $11½@$12.

American, with total sales for the week of 334 shares, declined from $7⅜ to $5. Hukill sold on Saturday at $4.50, advanced on Monday to $4.80, with the last sale yesterday at $4.60. The sales of Moose amount to 3350 shares at $3.35@$3, closing at $3. New York and Colorado has shown more business than for months, selling at $1.20 on Saturday, $1.80 on Tuesday, and $1.60@$1.65 to-day. The total sales of this stock have been 1030 shares. Ontario has been quiet, although strong, advancing from 37⅛ to 38½. Plumas has held very much its old range, with sales, however, of but 2900 shares. We are unable to learn who buys this stock, although we have no difficulty in tracing holders of stocks in which there is not one quarter of the apparent business done. One hundred shares of Seaton were sold out under the rule at 65c. King's Mountain has been more active, the sales aggregating 1200 shares at $1.65@$1.70.

Parties controlling the sale of the well-known California placer properties, the Dardenelles and Oro, are offering them in this city. These properties come with the highest reputation and indorsements, and with clear and exhaustive reports, by the ablest and most trustworthy experts on the Pacific Slope. The titles are U. S. Patents, and, in short, the property is presented in a faultless shape for examination by investors.

This class of property is considered a safe and very profitable investment, and is well worthy the attention of our capitalists. Maps and reports by Louis Jannin and W. S. Keyes can be seen in Mr. Stone's office, 33 Broad street.

The careful reports as to title, cost of working, estimated profits, etc., are well worthy the attention of those proposing to introduce mining properties to the Eastern public, and would afford many hints to the Committee of Securities of the New York Mining Exchange.

The Leeds Silver Mine.—At the recent annual meeting of this company in San Francisco, the report embracing the period from November 1st, 1877, to May 1st, 1878, was read : "The whole receipts of the mine during that time were $41,000 for the sale of stock as a working capital, and $410,189.26 in bullion. The principal disbursements during the same period have been : For mine labor, $91,000 ; mill labor, $43,000 ; mill supplies, $58,000 ; bullion discount and freight, $52,000, and $40,276 for the purchase of valuable mining claims adjoining, from which ore is now being taken. The company has distributed $60,000 in dividends, and carry over a cash balance of about $6000. They own three valuable claims, a good ten-stamp mill and are free from debt. At the present market rate the stock is selling at about $84,000 for the whole property—just one-third its value.

The McMillan Mining Co. has declared its second dividend of 25c. per share.

The Independence Mining Co. has declared its first dividend of 25c. per share.

The Oroville Gravel Mining Co. has levied an assessment of 10c. per share delinquent July 18th.

The Moore's Flat Blue Gravel has levied an assessment of 20c. per share delinquent July 19th.

COAL TRANSPORTATION AND GENERAL MINING STOCKS.

COAL STOCKS.

NAME AND LOCATION OF COMPANY.		Feet on Vein.	Capital Stock.	SHARES. No.	SHARES. Par Val.	ASSESSMENTS. Total levi'd to date.	ASSESSMENTS. Date and amount per share of last.	DIVIDENDS. Total paid to date.	DIVIDENDS. Last Dividend. Mo.	Yr.	Amt.	Rate per Ann.	HIGHEST AND LOWEST PRICES PER SHARE IN CURRENCY AT WHICH SALES WERE MADE. N. B.—Quotations of D., L. & W. R. R., and Pa. Coal Co. are per $100=two shares. June 22. H.	L.	June 24. H.	L.	June 25. H.	L.	June 26. H.	L.	June 27. H.	L.	June 28. H.	L.	SALES.
			$		$100	$	Mo. Yr. Amt.	$				Per c'nt															
Consol. Coal	Md.		10,250,000	102,500	$100	*			Jan.	1877	2½		25	25													50
Del. & H. Canal	Pa.		20,000,000	200,000	100	*		38,821,104	Aug.	1876	4	9	56	55⅜	56¼	56	56¼	56⅜	57¼	56⅝	57¼	56⅜	57⅛	56¾	4,230
Del., Lac. & W. R. R.	Pa.		26,200,000	524,000	250	*			July	1876	2½	5	58⅛	56⅜	58⅛	57¼	58⅜	57¾	59⅛	58⅛	59⅜	58⅝	59⅜	58	102,709
Lehigh C. & Nav.	Pa.		10,448,550	208,971	50	*			Nov.	1876	1½	5½	17¼	17⅛			17¼	17⅜	17⅜	17¼	17⅛	17⅛	17⅛	17⅛	1,063
Lehigh Valley R. R.	Pa.		27,228,855	540,858	50	*			July	1878	1		37⅜	37½	37⅝	37½	38	37⅝	38	38	38⅛	38⅛	38¼	38⅛	813
Maryland Coal	Md.		4,400,000	44,000	100	*			Jan.	1876	1½	1½													10	10	100
N. J. Central R. R.	Pa.		20,600,000	206,000	100	*			Apr.	1876	2½	2½	31¼	31¼	32⅛	30⅜	31⅞	31¼	33¼	31⅝	34¾	33¾	34⅞	34⅜	16,323
Pennsylvania Coal	Pa.		5,000,000	100,000	50	*			Feb.	1878	3															
Pennsylvania R. R.	Pa.		68,870,200	1,337,404	50	*			May.	1877	1½	8	30⅛	29⅞	30¼	30	30⅝	29⅞	30⅝	30⅛	31¼	30⅝	31⅜	31¼	50,904
Phil. & Read. R. R.	Pa.		34,278,175	685,563	50	*		43,012,497	Jan.	1876	2¼†	10	16	16	16	15⅞	16½	16	16⅜	16⅛	16	16⅛	16½	16⅜	12,742

GENERAL MINING STOCKS.

Dividend Paying Mines.

American	Col.		1,000,000	100,000	10	*			50,000	May.	1878	$0 10	12	7¼					7⅜									334
Belcher, c. s.	Nev.	1,040	10,400,000	104,000	100	1,184,200	May 1878	1 00	15,397,200	Apr.	1876	1 00	12															
Bobtail, c.	Col.	2,500	1,136,630	227,326	5	*			56,831	Nov.	1877		25															
Bobtail Tunnel, c.	Col.		100,000	20,000	5	52,000	July 1873	0 30	40,000	Dec.	1877		50	20														
California, c. s.	Nev.	600	54,000,000	540,000	100				28,080,000	June	1878	2 00	24	19½	19	19		18⅝	18	17¼	17	17½	15			475
Calumet & Hecla, c.	Mich		2,000,000	80,000	25	1,000,000			12,650,000	Feb.	1878	5 00	20		178	180	179	180		180		180	179⅞				
Central, c.	Mich		500,000	20,000	25	100,000	June 1862	0 65	1,260,000	Feb.	1878	5 00														103	
Chollar Potosi, c. s.	Nev.	1,400	2,800,000	28,000	100	1,610,000	Jan. 1878	3 00	3,080,000	Feb.	1872	1 00															
Copper Falls, c.	Mich		1,000,000	20,000	50	535,000	May. 1876		100,000	Nov.	1871	1 00						75c.		1		1				850	
Cons. Virginia, c. s.	Nev.	710	54,000,000	540,000	100	474,000	June 1873	3 00	40,500,000	June	1878	1 00	12	14½				14		14		14				50	
Confidence, c. s.	Nev.	130	2,400,000	24,000	100	256,320	Apr. 1878	0 50	78,000	May.	1865	8⅓	8⅓														
Cons. Her. & Roe.	Col.	16,500	1,000,000	100,000	10				120,000																		
Crown Point, c. s.	Nev.	600	10,000,000	100,000	100	1,673,370	Jan. 1878	1 00	11,588,000	Jan.	1875	2 00	24														
Eureka Cons., c. s. l.	Nev.		5,000,000	50,000	100	100,000	May 1876	1 00	2,350,000	May	1878	3 00	24														
Eureka G. Mg., c.	Cal.	1,680	2,000,000	20,000	100				2,149,000	Apr.	1878	0 25															
Franklin, c.	Mich		500,000	20,000	25	360,000	June 1876	5 00	585,000	Nov.	1871	1 00				6½										75	
Gould & Curry, c. s.	Nev.	612	10,800,000	108,000	100	2,690,000	Apr. 1878	1 00	3,825,800	Oct.	1870	10 00															
Grand Prize	Nev.	1,500		100,000					400,000	Feb.	1878	1 00															
Hale & Norcross, c. s.	Nev.	400	11,200,000	112,000	100	2,802,000	May 1878	0 50	1,598,000	Apr.	1871	5 00	12														
Hukill, c. s.	Col.	3,288	1,000,000	100,000	10	*			170,000	June	1878	0 10	12	4½		4.80	4.60					4.60				700	
Kentuck, c. s.	Nev.	95	3,000,000	30,000	100	270,000	Dec.. 1874	1 00	1,252,000	Mar.	1870	5 00															
Leopard, L. c. s.	Nev.	1,500	5,000,000	50,000	100	125,000	Apr.. 1878	50	102,500	Dec.	1876	0 50															
Merrimac, s.	Mas.	1,500	500,000	100,000		5			120,000	Mar.	1878	0 10	12														
Minesota, c.	Mich.		1,000,000	20,000	50	436,000	June 1869	1 00	1,820,000	Mar.	1876	0 50															
Moose	Col.	39,000	2,000,000	200,000	10	*			200,000	Mar.	1878	0 25	10	3.35	3.15	3.30	3.15			3¼	3			3		3,350	
National, c.	Mich.		500,000	20,000	25	195,000	Oct.. 1875	1 00	360,000	Oct.	1873	1 00															
N. Y. & Colorado, c.	Col.		1,000,000	50,000	20	*			20,000	Mar.	1877	0 20		1.65	1.20	1.75	1.65	1.80						1.65	1.60	1,030	
Northern Belle, s.	Nev.	1,000	5,000,000	50,000	100				1,425,000	Feb.	1878	1 00										12	11½			20	
Ontario.	Uth.	3,000	10,000,000	100,000	100				1,400,000	June	1878	1 00	6	37⅛		37¾		38		38½	38	38⅛				595	
Ophir, c. s.	Nev.	675	10,080,000	100,800	100	3,136,000	Mar. 1878	1 00	1,394,400	Mar.	1864	4 00															
Pewabic, c.	Mich.		500,000	20,000	25	185,000	June 1868	3 00	460,000	July	1873	1 00															
Phoenix, c.	Mich.		1,000,000	20,000	50	817,500	Sept. 1870	3 00	20,000	Jan.	1876	1 00															
Plumas	Cal.		1,000,000	100,000	10				32,000	June	1878		10	4.10	4.05	4.20	4.10	4.15	4.10	4.10		4.10		4.15		2,900	
Polar Star, c. s.	Col.	1,300	500,000	50,000	10	*			5,000	Jan.	1878	0 10															
Quincy, c.	Mich.		200,000	20,000	10				2,130,000	Feb.	1877	4 00						13								30	
Raymond & Ely, c. s.	Nev.	5,000	3,000,000	30,000	100	570,000	Apr.. 1878	1 00	3,075,000	Sept.	1873	3 00															
Ridge, c.	Mich.		500,000	20,000	25	200,000			90,000	Feb.	1875	1 00				1⅝	1½					1½				625	
Rye Patch	Nev.	1,000		30,000		97,500	Nov. 1876	0 50	105,000	Dec.	1877	0 25															
St. Joseph, L.	Mo.	2,000 acs.	1,000,000	100,000	10				250,000																		
Savage, c. s.	Nev.	800	11,200,000	112,000	100	3,748,500	Apr.. 1878	1 00	4,460,000	June	1869	3 00															
Seaton, c. s.	Col.	1,700	500,000	50,000	10	*			10,000	May	1877	0 10	12									65c.				100	
Sierra Nevada, c. s.	Nev.	3,650	10,000,000	100,000	100	1,950,000	May 1878	0 50	102,000	Jan.	1871	1 00	10														
Silver King									200,000	Feb.	1878	0 50															
Standard	Cal.			50,000					450,000	May	1878	1 00															
Yellow Jacket, c. s.	Nev.	1,200	12,000,000	120000	100	3,678,000	Apr.. 1878	2 00	2,184,000	Aug.	1871	2 50															

Non-Dividend Mines.

Allouez, c.	Mich.		1,000,000	20,000	50	940,000	May	1876	5 00					4														100	
Alpha, c. s.	Nev.	300	3,000,000	3,000	100	240,000	Mar.	1878	1 00																				
Am. Flag, c.	Col.	5,300	600,000	60,000	10	*								15c		15c				20c	17c	25c	21c	27c	24c	2,900	
Bertha & Edith. c.	Vir.	645 acs.	3,500,000	350,000	10	*								8c	6c	8c	7c	7c		7c		8c		9c	7c.	0,900	
Best & Belcher, c. s.	Nev.	545	10,080,000	100,800	100	438,590	Apr.	1878	1 00																				
Buckeye	Col.		5,000,000	500,000	10	*																							
Bullion, c. s.	Nev.	943⅝	10,000,000	100,000	100	2,802,000	Jan..	1878	1 00																				
Caledonia, c. s.	Nev.	2,188	10,000,000	100,000	100	1,440,000	May.	1878	0 50																				
Cashier	Col.		500,000	250,000	2	*																							
Cleveland, c.	Col.	3,715	250,000	25,000	10	*																							
Cons. Imperial, c. s.	Nev.	408	50,000,000	500,000	100	675,000	Apr.	1878	0 20																				
Con. N. Slope & E. C.T.	Col.	15,000	500,000	10,000	50	*																							
Dahlonega	Ga.		250,000	250,000	1	*																							
Dana, c.	Mich.		500,000	20,000	25	68,000	Jan..	1863	0 50					23c	19c	25c	21c	32c	21c	41c	25c	30c	20c	20c	19c	42,900	
Dawson, s.	Ont.		1,200,000	60,000	20																								
Duncan, s.	Ont.		1,200,000	60,000	20	75,000	July	1876	4⅛					5	4⅞	5⅞	5½	6⅜	6	7	6	6¼	5½			6,862	
Exchequer, c. s.	Nev.	400	10,000,000	100,000	100	380,000	Jan..	1878	1 00																				
Gold Placer, c.	Col.		5,000,000	200,000	25									64c	57c	63c	58c	57c	56c	50c		57c	54c	54c	51c	8,200	
Granville, c.	N. C.	357 acs.	1,000,000	100,000	10	*			0 50																				
Humboldt, c.	Mich.		500,000	20,000	25	100,000	Sept	1876	0 15																				
International, s.	Ont.		1,200,000	60,000	20									70c		87½		1¼	1	1¼	1	87½	75c			6,700	
Julia, c. s.	Nev.	3,000	11,000,000	110,000	100	525,000	Jan..	1878	0 75																				
Justice, c. s.	Nev.	2,100	10,500,000	105,000	100	2,495,500	Mar.	1878	1 50																				
King's Mountain, c.	N. C.		1,200,000	120,000	10	*								1.65										1.70	1.65	1,200	
Lacrosse	Col.	3,000	1,000,000	100,000	10	*								31c	30c	30c		30c	29c	34c	29c	37c	32c	41c	36c	67,700	
Luzerne	Col.	4,200	5,000,000	500,000	10	*																							
Madison, c.	Mich.		500,000	20,000	25	123,000	Sept	1876	0 10																				
Mariposa preferred	Cal.	44,387	5,000,000	50,000	100	1,425,000	June	1877	1 00																				
" common	Cal.	acres.	10,000,000	100,000	100	1,425,000	June	1877	1 00																				
Memphis	Col.	6,000	300,000	60,000	5	*																							
Mesnard, c.	Mich.		500,000	20,000	25	160,000	Apr.	1876	0 50																				
Mexican, c. s.	Nev.	600	10,080,000	100,800	100	217,400	May.	1878	0 50																				
Mt. Bross Tunnel	Col.	8,000	2,000,000	200,000	10	*																							
Overman, c. s.	Nev.	1,200	3,840,000	38,400	100	3,173,880	Apr..	1878	3 00																				
Osceola, c.	Mich.		1,000,000	40,000	25	2,567,880	Nov.	1877	3 00									9		9						110	
Petherick, c.	Mich.		500,000	20,000	100	165,533	Mar.	1876	0 50																				
Pleasant View, c.	Col.	1,200	200,000	20,000	10	*																							
Quicksilver preferred	Cal.	8,500	4,291,300			*								33												100	
" common	Cal.	acres.	5,708,700	100,000	100																								
Rockland, c.	Mich		500,000	20,000	25	495,000	Jan..	1874	1 00																				
Sag. Belcher, c. s.	Nev.	160	640,000	6,400	100	244,800	Apr.	1876	5 00																				
Silver City, c. s.	Nev.	3,900	6,310,000	63,100	100	15,775	Nov.	1876	0 25																				
Silver Hill, c. s.	Nev.	5,400	10,800,000	108,000	100	1,188,000	Apr..	1878	1 00																				
Star, c.	Mich.		500,000	20,000	25	265,000	Mar.	1878	0 50																				
Superior, c.	Mich.		500,000	20,000	25	340,000	Mar.	1874	0 25																				
Union Cons. c. s.	Nev.	850	10,000,000	100,000	100	310,000	Apr..	1878	0 25																				

c. Gold. s. Silver. L. Lead. c. Copper. * Non-Assessable.

Total Assessment levied to date ..... 50,317,348 | Total Sales of Coal Stocks for the week ..... 189,624 shares
Total Mining Dividends to date ..... 227,639,332 | Total Sales of Mining Shares for the wee'k 210,209

† A dividend of ⅜ per cent. was declared on the preferred stock of this Co. in July, 1876.

SAN FRANCISCO MINING STOCK QUOTATIONS.

Daily Range of Prices for the Week.

NAME OF COMPANY	CLOSING QUOTATIONS						Opening June 28.
	June 21.	June 22.	June 24.	June 25.	June 26.	June 27.	
Alpha	12⅜	12¼	12¼	12	11½	11¼	11
Belcher	4½	4⅜	5¼	5	4¼	4½	4¼
Best & Bel.	13⅜	13⅝	13⅝	15	13⅞	14⅛	12½
Bullion	5¼	5⅛	5¼	5¼	4¾	4¾	.....
Caledonia	2¼	.....	2½	2⅝	2½	2¼	.....
California	13⅜	18¼	17⅝	16½	15⅝	15¾	15¼
Chollar-Pot	25½	25½	25¾	26½	26½	26	27
Con. Imp	.....	.....	.....	.....	.....	.....	.....
Con. Va	13½	13⅝	13½	13⅛	13	13	12⅝
Confidence	4	.....	4¼	4¼	4¼	.....	.....
Crown P'int	6¼	6⅛	6⅞	6½	5¾	5⅝	5¾
Eureka Con	56	56	56½	56¾	57	57½	57½
Exchequer	3¼	3⅛	3¼	.....	3¾	3	.....
Gould &Cur	6¾	6⅝	6⅞	6⅝	6⅝	6½	6½
Grand Prize	4½	4½	.....	4½	3⅞	4	.....
Hale & Nor.	7⅜	7⅜	7¼	7⅜	7⅜	7½	7
Julia	7⅜	.....	7	6⅝	6¼	6¾	7½
Justice	3½	3½	3½	4	3⅞	4	4
Kentuck	3½	3¼	3⅜	3½	3	3	.....
Mexican	13½	13½	13¾	14	13¼	13¾	13⅛
North. Belle	11½	.....	11	11	11	11¾	.....
Ophir	48½	49	48¼	48	46	47	47
Overman	13¼	13½	13⅜	13½	12	12½	12
Ray. & Ely	.....	.....	4	4	3⅞	.....	2½
Silver Hill	1¼	.....	1¼	1¼	1¼	1¼	.....
Savage	11⅝	11⅜	11¼	11⅝	11¼	11½	11⅜
Seg.Belcher	.....	.....	20	.....	.....	23	.....
Sierra Nev.	4⅜	4¼	4⅜	5⅛	4¼	4½	.....
Union Con.	5⅜	5⅜	5½	5⅝	5⅛	5⅜	.....
Yel. Jacket.	8¼	8¼	8½	8	7⅞	7⅞	.....

The present output of the two bonanza mines equals 800 tons per day, the yield of the mines being equal. Notwithstanding this very satisfactory yield, equal to a daily product of about $75,000, and notwithstanding no official announcement appears of the first sign of any exhaustion in the rich ore-bodies, yet the bonanzas still continue their downward course, Consolidated Virginia opening to-day at $12⅝, and California $15¼, with the loaning rates reduced to $5 and $10 per share, respectively. The decline in this latter stock from $19½ a week ago, nearly equal to one fourth of the mine, looks suspicious, and argues that either the public have become possessed of information nearly defining the extent of ore remaining, or that these stocks are artificially depressed for a purpose. We are inclined, however, to the first expression. Ophir is down to $47, against $49½ a week ago. No change is reported in the appearance of this mine, and we shall probably be obliged to wait a few weeks for preparatory operations before getting much satistactory information regarding the extent and value of the new bonanza in this mine. The stock of the Savage Mining Company is the most steady on the list and is the only exception to the general declining tendency. Operations on the east cross-cut on the 1640-foot level of this mine have ceased on account of the shock from the blasts in the Sutro Tunnel header. The connection of this mine with the tunnel will probably be made very soon. A recent dispatch from San Francisco states that Superintendent Fair, of the bonanza firm, is about to retire from the superintendency on account of ill health. The annual meeting of the Alpha Mining Company was held in San Francisco on the 17th inst. The expenses of the past year were $35,179, and the receipts $60,000, principally from assessments. There is now over $20,000 in the treasury. The north lateral drift from the bottom of the joint winze on the 2400 level of this mine is now in 150 feet, the face in a mixture of quartz, porphyry, and clay of a soft, favorable character.

NEW INCORPORATIONS.

We note the recent organization of the following companies, in addition to those announced in our issue of June 1st:

Name of Company.	Location.	Capital Stock.
Bald Mountain Mining Co	Nevada	$90,000
Cons. Durando Mining Co	Nevada	10,000,000
Dayton Gravel Mining Co	Nevada	24,000
Ruby and Dunderberg Mining Co	Nevada	1,265,000
White Cross Cons. Mining Co	Nevada	5,000,000
Coldstream Mining Co	Colorado	1,000,000
Dallas Mining Co	Colorado	1,000,000
Metal Milling & Mining Co	Colorado	100,000
Slide Creek Mining Co	Colorado	12,000
Standard Lateral Ditch Co	Colorado	300,000
Arizona Mining & Water Co	Arizona	2,000,000
Bushell Mining Co	Arizona	10,000,000
Mammoth Mining Co	Arizona	10,000,000
St. Louis Mining Co	Arizona	10,000,000
New Hope Mining, Milling & Ditch Co.	California	400,000
Pacific Gas Consumers' Association	California	250,000
Empire Mining & Milling Co	Utah	1,000,000

THE SAN ANTONIO SILVER MINING CO., OF NEVADA.—Property consists of Liberty and Patomac Mines in San Antonio District, Nye County, Nevada. Title perfect. These mines are largely developed, have yielded handsomely, and are very promising. The particular attention of investors requested—25,000 shares, $2,500,000 capital. A limited number of shares offered at $4 per share. Prospectus forwarded and full information given on application to CHARLES COOPER, 58 Pine Street.

See announcement in JOURNAL of May 11th.

GRANVILLE GOLD COMPANY.

Incorporated November 10th, 1876.

Capital, $1,000,000. 100,000 Shares, par value $10.

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The public are informed that on the 16th day of last month a gentleman, accompanied by a lady, entered the ticket office of the MISSOURI, KANSAS and TEXAS RAILWAY at HANNIBAL, MO., and purchased of the Ticket Agent two first-class tickets, reading from Hannibal, Mo., to DALLAS, TEX. They also inquired if there was a sleeping car running direct through. The Ticket Agent informed them that there was, and that it would leave in a few moments. They then asked if the Sleeping Car passed through DENISON and SHERMAN, TEX. The Ticket Agent answered that it did, and was just about to hand the party a map and time table of the famous INDIAN TERRITORY ROUTE TO TEXAS, when the lady broke out, "See here, Mister Ticket Agent, I have heard and I have read a great deal about this MISSOURI, KANSAS, AND TEXAS RAILWAY and the B. I. T., and I want you to tell me the truth before we take that train. Is it true that there is only one railroad in the United States that passes through the B. I. T., and is it true that the name of that road is the M., K. and T., and is it true that everybody takes it, and that it ENTERS TEXAS AT DENISON?" "Madam," says the Ticket Agent, "I am proud to say it is all true, the M., K., and T. R'y is the only line that ENTERS TEXAS AT DENISON, and the only line running SLEEPING CARS to SHERMAN and DALLAS, TEX., and"—just then the bell rang; the parties made haste to the train, which was in a moment whirling on its way to TEXAS and the far-famed Indian Territory, while the HANNIBAL Ticket Agent walked the floor of the M., K., and T. TICKET OFFICE racking his brain, trying to make out what "she" meant by "B. I. T." He never stopped to think that every day in the week he was asked from 200 to 300 times, "Give me a ticket to DALLAS, or FORT WORTH, or DENISON, or SHERMAN, or HOUSTON, through the BEAUTIFUL INDIAN TERRITORY," which last three words the lady abbreviated. Reader, if you are going to TEXAS, try the route through the Beautiful Indian Territory. It is the PANORAMIC ROUTE TO TEXAS.

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